SOAP

AUGUST 1937

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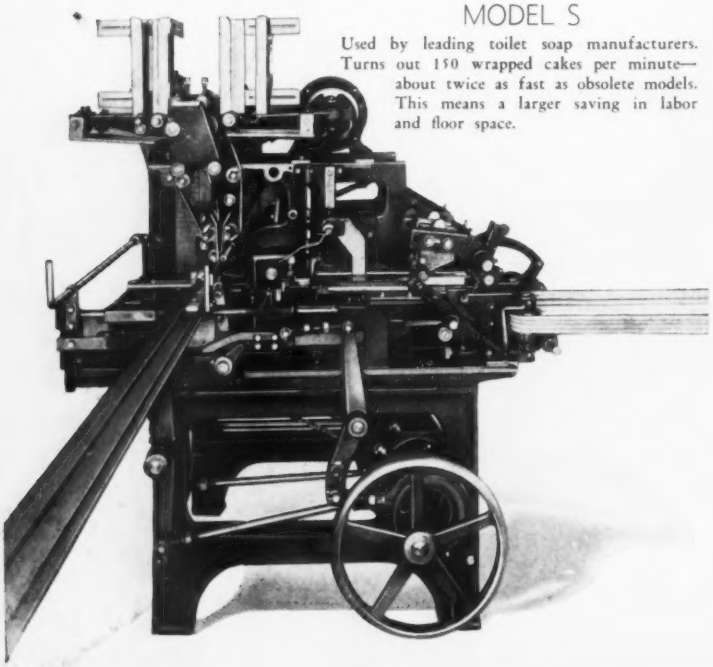

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BALTIMORE MARYLAND

SOAP

Volume XIII
Number 8

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August, 1937

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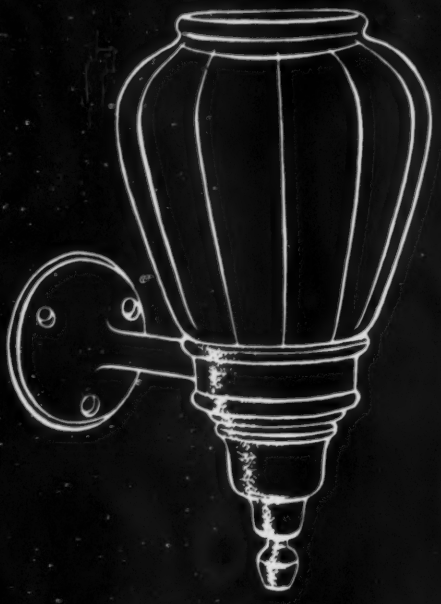

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Also made with goose neck bracket.

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Hundreds of thousands in use giving year-in-year-out satisfaction.

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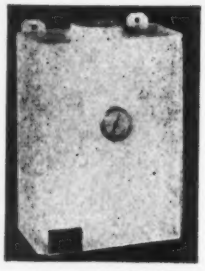

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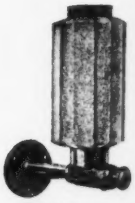

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✓LAUNDRY SOAPS
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Javonella imparts a fresh, clean and lasting fragrance

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603 JOHNSON AVENUE, BROOKLYN, N. Y.

Manufacturers of Aromatic Chemicals, Natural Derivatives, Perfume Oils, Artificial Flower and Flavor Oils

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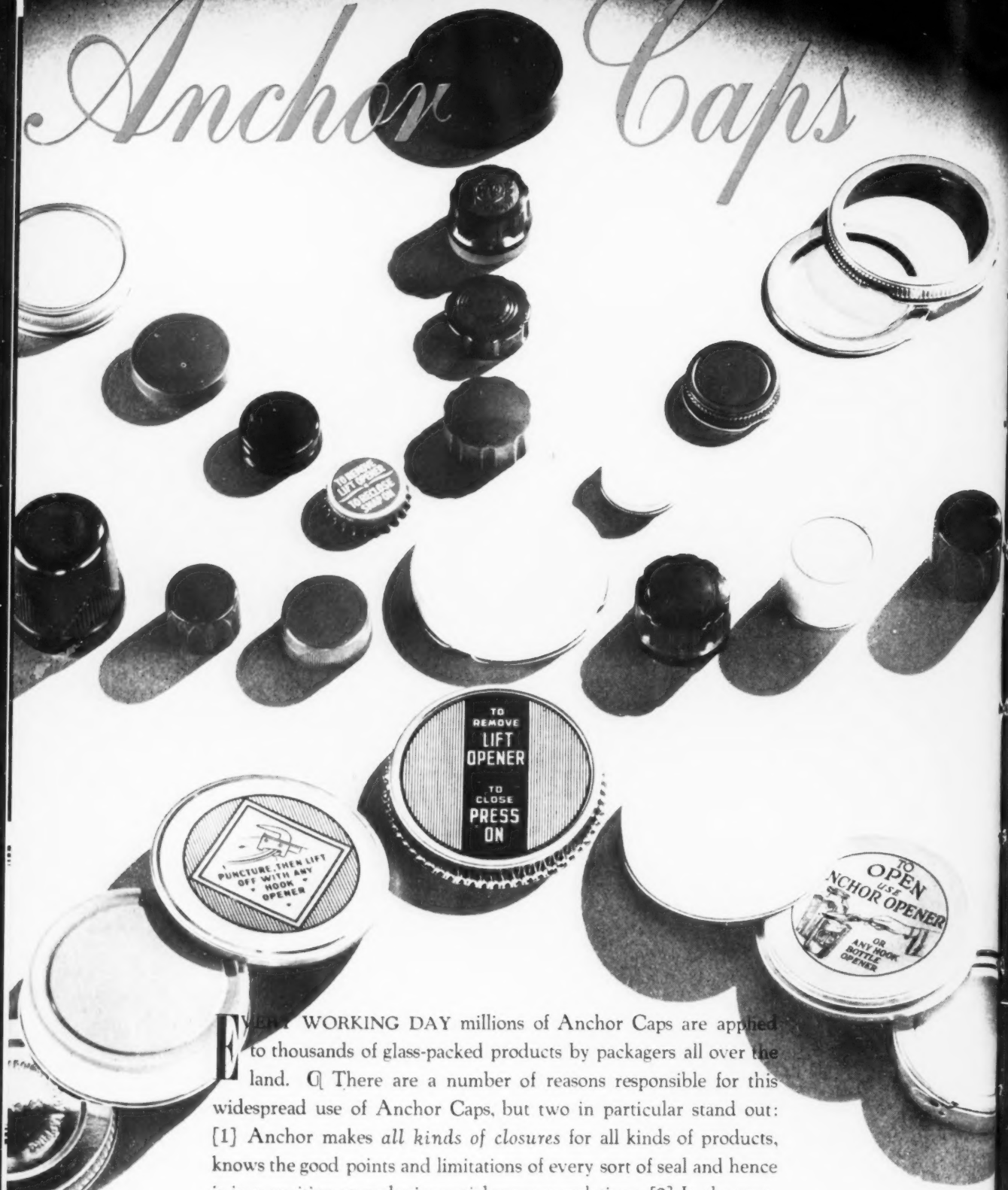
Anchor Caps



EVERY WORKING DAY millions of Anchor Caps are applied to thousands of glass-packed products by packagers all over the land. ¶ There are a number of reasons responsible for this widespread use of Anchor Caps, but two in particular stand out: [1] Anchor makes *all kinds of closures* for all kinds of products, knows the good points and limitations of every sort of seal and hence is in a position to make impartial recommendations. [2] In the manufacture of Anchor Caps specifications are rigidly adhered to. Anchor's experience is of long standing, its operations extensive—it can maintain the engineering staff, laboratories and inspection services to assure you well-made, uniform, dependable caps on *every* order. ANCHOR CAP & CLOSURE CORPORATION, Long Island City, N. Y.; Toronto, Canada. Branch offices in all principal cities.

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THROUGHOUT THE WORLD

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A change from linseed oil to cottonseed oil was considered so unsatisfactory as to impel the return to the use of linseed oil.

And now linseed oil soaps seem to owe their value to their vitamin F content.
(Kathryn Glennon, Soap, Nov., 1936)

Any soap can be made to approach the medicinal value of official soap by liberally incorporating vitamin F—the ingredient to which official soap seems to owe its value.

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IS TO
OLEUM LINI, U.S.P.
(LINSEED OIL)
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ARE TO
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Also, send Kathryn Glennon's article, titled "Vitamin Soaps."

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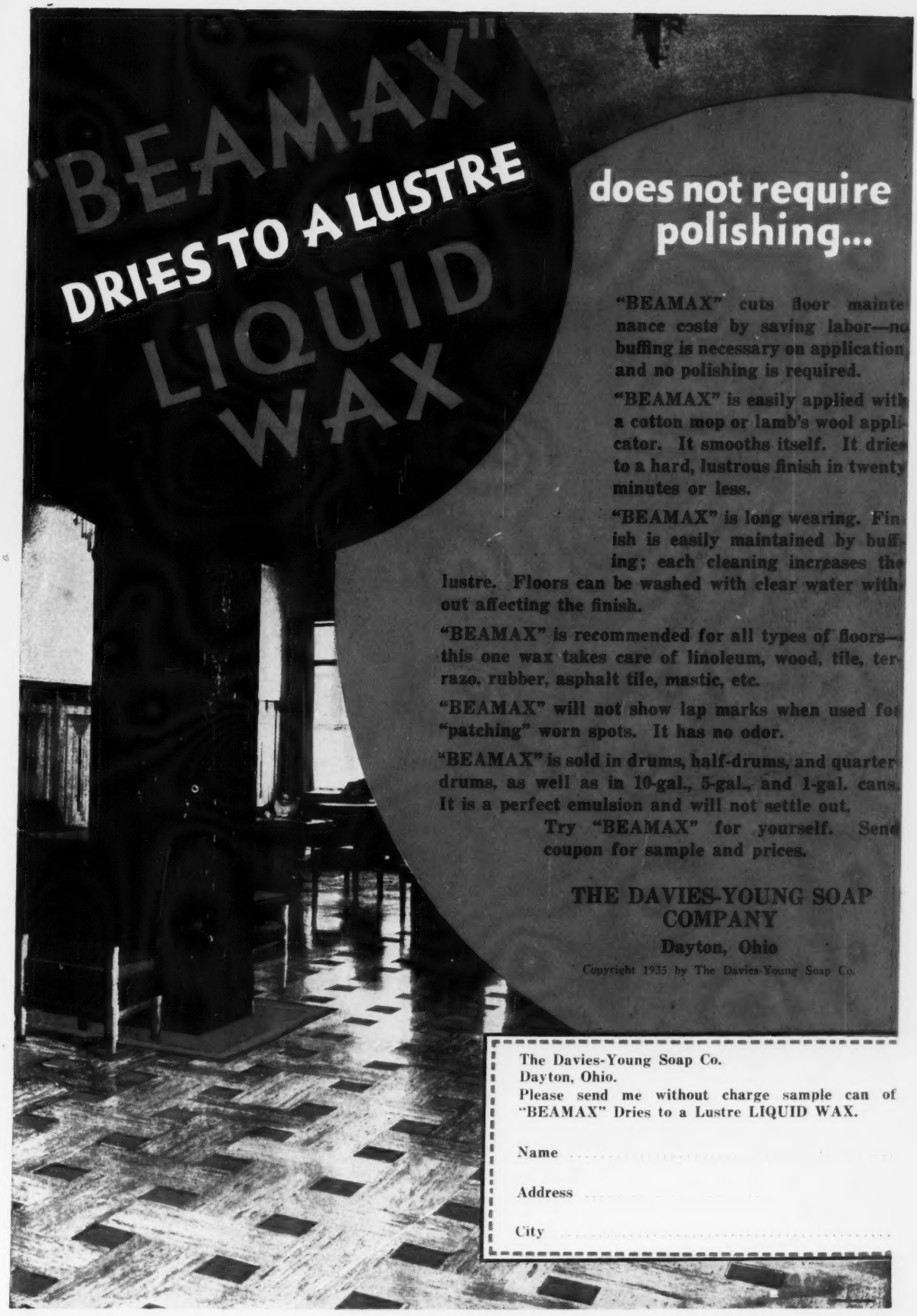

does not require polishing...

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"BEAMAX" is easily applied with a cotton mop or lamb's wool applicator. It smooths itself. It dries to a hard, lustrous finish in twenty minutes or less.

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Dayton, Ohio

The Davies-Young Soap Co.
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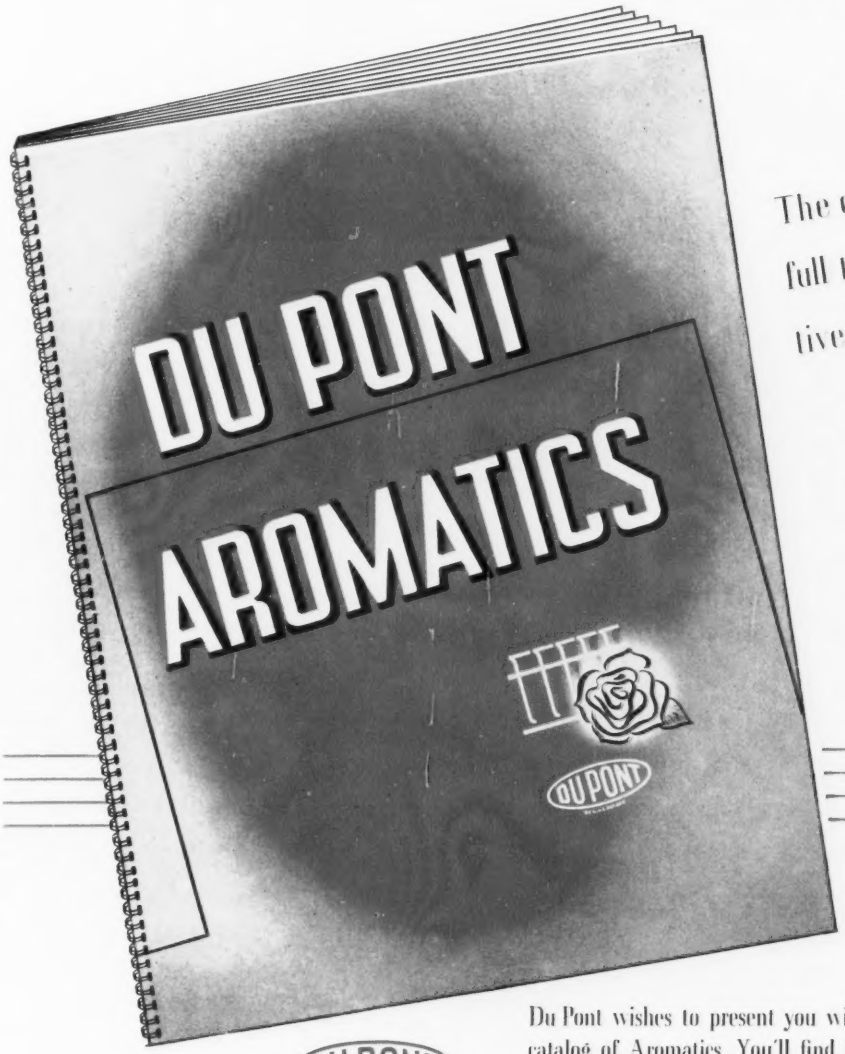

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A note on your office stationery will bring you one of these attractive new catalogs by return mail...with the compliments of Du Pont.

E. I. DU PONT DE NEMOURS & CO., INC., FINE CHEMICALS DIVISION, WILMINGTON, DELAWARE

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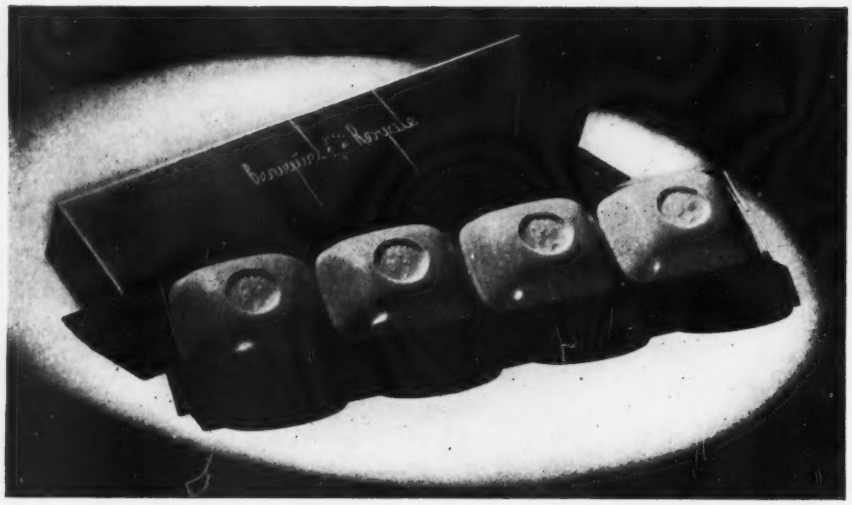
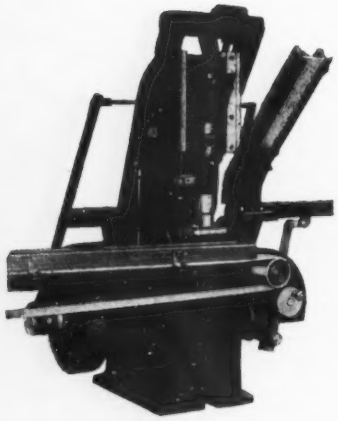


. . . with a new toggle type pin die

JONES SOAP PRESS



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Toggle Operated Press for Pin Die Work

THE difference between a cake of soap pressed on a new toggle type JONES PRESS, and one pressed on an old style press, is a perfect, beautifully finished soap when the new toggle press is used . . . longer pressure, hence a better finish, more perfect detail and no marred cakes . . . greater economy in pressing . . . and no noise or vibration . . . reasons why you should look into the matter of replacing your older presses with new JONES toggle PRESSES.

JONES PRESSES are used the world over . . . every hour of the day . . . and night . . . they are working somewhere.

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As the editor sees it....

IN a vote at a large eastern soap plant on the question of designating an affiliate of the American Federation of Labor as the collective bargaining agency for the employees, we are informed by the National Labor Relations Board, the Federation lost the vote by four to one. The majority decided that they did not want to be represented by an outside union. This is the latest case reported in the movement to organize the soap industry. Three months ago, the efforts of an A. F. of L. affiliate in another well-known eastern soap plant met with success. Within a brief time, the employees were organized, accepted the union, and the company signed a closed-shop agreement.

But this is three months later. The frenzy and hysteria of labor organization activity seems to have spent much of its force. Employees do not appear quite as ready to accept organization as they were some time back. They have had an opportunity to give some cold, sober thought to the question. At the same time, there is also the possibility that conditions in the plant where this latest organization attempt was made, are somewhat better than in some other cases.

Be that as it may, we feel that the labor unrest, the strikes and disorder in various parts of the country during the past six months or so, have impressed the thoughtful worker with the idea that membership in a union is not all for the protection of his interests. It incurs an obligation for the worker which many apparently have come to see in another light. For after all, the average worker is far more interested in keeping his own job and looking after his own interests than he is in the cause of labor generally. It is only when conditions become intolerable or he is driven to it by the lash of the mob spirit usually incited by labor leaders that the everyday average worker,—who really wants to work,—will jeopardize his job to fight for the cause of labor, and we have never heard tell of any great number of philanthropists in the ranks of labor any more than we have in the ranks of employers.

So, after all is said and done, this latest vote on the labor question is not as much of a surprise as it might be. It might be something for employees elsewhere in the soap industry to consider if they are called upon to vote,—something to which considerable thought might be given *before* voting.

ACCORDING to a decision by a Federal Court at Chicago, taxes paid on coconut oil and other oils already in process when the excise tax law,—Section 602½ of the Revenue Act of 1934,—went into effect in 1934, were illegally collected by the Bureau of Internal Revenue and must be refunded. This decision was rendered in a suit by Armour to have refunded $172,962 in excise taxes paid on materials in process or on hand in its soap plants which were made from coconut, palm, or sunflower oils prior to the effective date of the tax.

In anticipation of the passage of the three-cent excise tax on coconut and other oils back in 1934, many soapers bought large quantities of oils ahead and partly processed them prior to the proposed tax becoming law. Production for several months was pushed to the limit in soap plants to build up stocks of finished soaps and to put as much taxable material in process as possible prior to the passage of the tax law. The Treasury Department held that the oil content of these products, both completed and in work, was taxable and proceeded to collect the tax. This latest court decision reverses the ruling of the Treasury Department.

This decision means that several million dollars in taxes collected under similar circumstances

are refundable to soap manufacturers. Steps to secure refunds by other soapers will undoubtedly follow. This is the first court decision in all the excise tax litigation where a definite ruling in favor of a soaper looks as though it might stand the test of the higher courts to which the case will in all probability be carried by the Treasury Department.

DOMESTIC producers of oils, fats, greases, butter and other dairy products, and the farmers generally, hereinafter referred to as the "dairy crowd" and sometimes also called that in Washington by legislators who do not like to be worked on too hard or too long by lobbies,—well, anyway, the "dairy crowd" are again considerably excited about imports of whale oil. First, they fear that in the trade agreement now being negotiated with Norway, the tax and duty on whale oil may be removed or reduced, thus opening the gates for a flood of Norwegian whale oil into the United States with its attendant toll on the price of domestic fats, etc., etc. Second, they accuse certain importers of whale oil, supposedly of American origin insofar as it is produced in the South Arctic Seas on a floating factory of American registry, of really shipping in oil free of duty which has a very strong Norwegian accent. The "dairy crowd" say that this oil is produced from strictly Norwegian whales, killed with Norwegian harpoons, shot by Norwegians from Norwegian killer boats,—and is even shipped to the U. S. in Norwegian tankers, —and they do not like it and want it stopped. And they are kicking up quite a hullabaloo and sending out plenty of "press releases" about it to the newspapers and the trade papers.

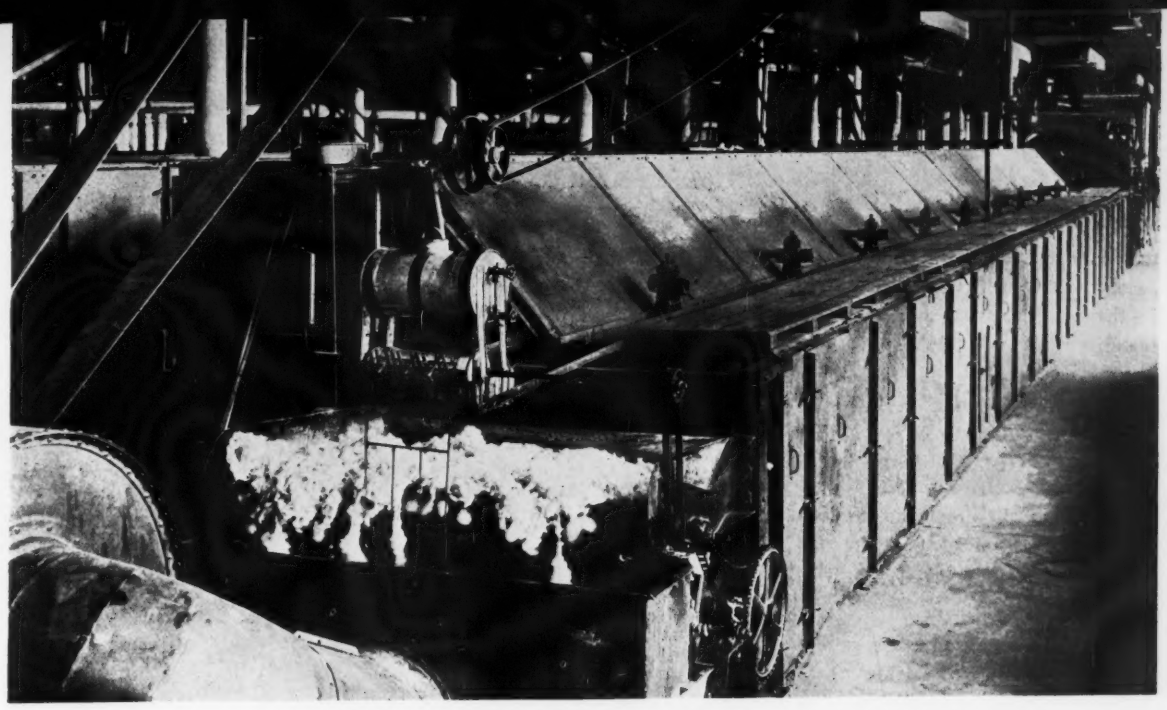
Judging from past procedure, they are also bringing considerable pressure to bear on the right people in Washington. And if past performance is any criterion, these "right people" had better get busy and do something before the "dairy crowd" undertakes to pin their ears back. The merits of the case really do not matter. The "dairy crowd" wants something done, and politicians with an eye to the future have heretofore been in the habit of doing it.

JUDGING by letters received during recent months from various parts of the country, we had about concluded that SOAP was a pretty good trade paper, and that its editorial staff was reasonably alert in keeping up to date. And then from the rock-bound coast of Maine, where independent thought abounds and where it is still respectable to be a Republican, we received a rude jolt,—a jolt which jarred our pride to its foundations.

The communication from Maine, exactly as worded, including spelling, follows: "Last week in Boston I saw a copy of your SOAP magazine. Looked it over thoroughly and its not of interest to me. Many of the articles were of old information that I passed up a few years past. What I am looking for is a soap magazine with advanced idears of up to date doings. I have been a textile chemist for 25 years, made tons of soaps and have excepted a position with one of the largest mills in the U.S. and will manufacture their soaps. Your magazine I looked over was a seven months old issue, but even at that date the articles were stale to me. Its advanced information I am interested in, original idears."

Withal, a blunt statement from a practical man,—obviously a *practical* man,—and a statement which has unsettled us considerably, not to repeat the aforementioned jolt to our pride. The finger is pointed in our direction. The next move is ours, unquestionably,—and it appears that we must get out and on the trail of some "advanced idears" if we are to get anywhere. Suggestions welcomed.

A SOAP maker who follows the oil and fat markets rather closely and who has been right in his predictions more than once during the past two years, expresses the view that coconut oil prices are not going to be any lower as the year goes on. In fact, he looks for higher prices. At the same time, he believes that the markets for domestic vegetable oils are going to feel the effects of large production this year. However, he sees coconut moving independently of the others and against the general trend. His reasons are several, and too long to set down here. Nevertheless, they appear altogether logical.



Non-soap detergents are finding a steadily increasing use in the textile industry,—also in shampoos and dentifrices.

Notes on the NON-SOAP DETERGENTS

By H. A. Compston

RECENT research in the realm of soaps and non-soap detergents has been sufficiently fruitful to be embarrassing upon occasion to the busy executive who is anxious to keep abreast of developments, but has lacked the time to study either the technical or the commercial aspects of the situation closely. Thus, the attempt is made here merely to touch briefly and simply on the chemical and detergent aspects of a few of the more common products so that recent literature on the subject may be more readily understood.

How frequently does one see reference made to sulfated fatty alcohols. These compounds are being used increasingly in the detergent field as times goes on, as well as in the preparation of insecticide spraying mixtures and technical emulsions, in shampoos for the hair and dental compositions. Several prominent firms of dentifrice manufacturers are reported making considerable use of synthetic detergents at the present time.

In the textile trade sulfated fatty alcohols are already well established and find regular use in the washing, wetting and kindred processes for yarns and fabric. Their advantage over soap is not confined to washing in hard water, that valuable feature of non-sensitivity to lime not being the only factor which leads manufacturers to employ them. Wool, for example may be advantageously washed in a liquor of sulfated fatty alcohol and then immediately taken out and plunged into a dye bath of hot sulfuric acid. Under such conditions, soap would immediately break down into a scum of free fatty acid which would hinder the level dyeing of the material. Sulfated fatty alcohols, on the other hand are not attacked to the same extent and even aid the even distribution of color in the dyebath. Detergents of this class are useful to the textile technologist because they remove a very common source of imperfections.

Another attractive feature about sulfated fatty alcohols and

other similar products is the softening influence they exert on goods treated with them. Dipping in a warm aqueous bath of sulfated cetyl alcohol, for instance, cleans a soiled fabric immediately and at the same time, the residue of detergent left in the cloth afterwards endows the material with a very definite soft "handle," so that diligent rinsing and centrifuging is not, in general, necessary. No bad odor or rancidity may be expected from garments or goods in which is left a residue of sulfated fatty alcohol. There is no need to emphasize how large an advantage is this factor alone compared with soap.

It is interesting to note that in order to reduce the tendency to harshness which accompanies too frequent washing of wool in alkaline liquors, a German concern recently patented the application of synthetic detergents with the express intention of restoring the natural softness of that fiber. It is to be noted that the patent is exclusively concerned with renewing softness and is not to be confused with any idea of washing the wool.

Manufacturers are notoriously shy in declaring publicly the exact nature of their proprietary products, —for obvious reasons. Yet there are certain well defined types and classifications in them which admit of the application of a little chemical formula writing. As received by the user of soapless detergents, a product will in all probability be a pale yellow powder containing not more than perhaps 50 per cent of the active detergent principle. The remainder will be perhaps sodium sulfate, sodium carbonate or phosphate, besides also some unchanged fatty alcohol. So it must not be assumed that the following formulae can be strictly applied to any product in the sense that chemically pure sodium chloride can be labelled "NaCl."

Sulfated fatty alcohols are obtained by the treatment of fatty alcohols with sulfuric acid. Thus, the production of such compounds takes place in the following stages.

(1) Fatty acid is reduced (by hydrogenation) to fatty alcohol.

$CH_3.(CH_2)_{14}.COOH$
Palmitic acid $\rightarrow$
$CH_3(CH_2)_{14}.CH_2OH$
Cetyl alcohol

(2) Treatment of the alcohol with sulphuric acid under moderate conditions converts it to the sulfate:

$CH_3.(CH_2)_{14}.CH_2OH$
$\rightarrow$
$CH_3.(CH_2)_{14}.CH_2.O.SO_2.OH$

(3) The resulting sulfuric ester is neutralized to the sodium salt:

$CH_3.(CH_2)_{14}.CH_2.O.SO_2.ONa$
Cetyl sodium sulfate.

It should be noted that the alchol is esterified only, just as may ethyl alcohol be esterified to ethyl hydrogen sulfate:

$CH_3.CH_2.O.SO_2.ONa$

The chain of carbon atoms is not touched by the sulfuric acid treatment, the sulfate radical is attached via the oxygen. Consequently the frequent naming of such compounds "fatty alcohol sulfonates" is scientifically inaccurate. True sulfonates of fatty alcohol chains can be prepared, but a much more intense treatment with sulfuric acid is called for.

Details of the manufacturing methods of sulfated fatty alcohols may be best found in the patent literature for here we are only considering general principles. A commercial sulfated fatty alcohol product may be expected to consist of sulfates of a number of alcohols of varying carbon chain length. Thus, a common member of the class contains a major proportion of sulfated lauryl or dodecyl alcohol:

$CH_3.(CH_2)_{10}.CH_2.O.SO_2.ONa$

In addition, a commercial product may be expected to contain a proportion of unchanged fatty alcohol, that is, a percentage which has escaped sulfation. This constituent is not undesirable in a detergent since it adds to the softening influence of the mixture. The possible presence also of sodium sulfate has already been referred to. Some authorities consider this ingredient objectionable in the case of mixtures for cosmetic use. From the point of detergency, however, nothing is lost by its inclusion except concentration. It is even claimed to intensify the detergent action.

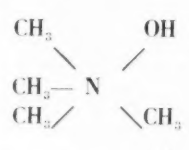
THERE is another important class of wetting and detergent products marketed by the I. G. Farbenindustrie A. G. which have won for themselves world-wide recognition and appreciation. Again, we lay no claims to having concrete proof of the composition of these bodies, the Igepons, but intend only to indicate the general type of chemical formula applicable.

Thus, the formula for Igepon T has been given as

$C_{17}.H_{33}.CO.NH.CH_2.CH_2.SO_3Na$

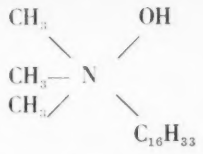
in which it is shown to be a true sulfonate. Its properties are similar to those of the sulfated fatty alcohols. It will wet and lather in water of an acid reaction or in the presence of metallic salts such as lime. Its presence in soap liquors has a stabilizing effect and reduces the precipitation of lime soap scum. The manifold uses to which this and similar related products have been put are too numerous to mention here but examples may be found by even a cursory study of the patent literature.

Interesting possibilities apparently lie in the quaternary compounds of nitrogen containing a long-chain fatty constituent. A simple example of this class of compound is seen in tetramethyl-ammonium-hydroxide:



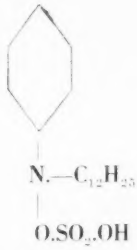
When one of the methyl groups is substituted by a long chain

fatty alcohol group, the product becomes surface-active.



Trimethyl-cetyl ammonium hydroxide

The above compounds are based on the formula for ammonium salts, but other members of the same order are based on pyridine as the parent substance. Thus there is lauryl (or dodecyl) pyridinium sulfate.



This is an example of an "inverted soap," being cation-active. Whilst ordinary soap and sulfated fatty alcohol derivatives are anion-active and bring about the peptization and emulsification of dirt carrying a negative electrical charge, cation-active bodies such as the ones instanced above behave negatively as detergents and tend to deposit solids on the goods being treated. Thus, they are capable of breaking down very stable emulsions. It is as yet too early to see what practical consequences may follow upon the recent research with cation-active bodies but there is every reason to expect interesting new developments.

IN recent years, much research has been done with organic compounds of sulfur and many new derivatives prepared which have been found to possess good wetting and detergent powers. The organic sulfides and mercaptan compounds are sufficiently numerous and interesting to make a study of their own. Organic radicles such as methyl, ethyl and phenyl form both hydroxyl compounds; that is the alcohols, and also thio-alcohols, usually named mercaptans. Thus, we have ethyl alcohol, C_2H_5OH and the corresponding sulfur compound, ethyl mercaptan, C_2H_5SH. The latter compound is a neutral liquid, which possesses, however, feebly acidic properties whereby it may form a sodium salt. C_2H_5SNa.

In the same way that ethyl alcohol condenses to form an ether, alkyl mercaptans are capable of forming thio-ethers, though not necessarily by the same sequence of reactions. For example, di-ethyl ether is $C_2H_5OC_2H_5$ and di-ethyl sulfide is $C_2H_5SC_2H_5$. The latter compound possesses no acidic qualities. It will be noted that the two ethyl groups are bound together through a sulfur atom, a state of affairs which obtains in most of the new sulfide detergents. Instead, however of simple radicles such as ethyl, many of the newer bodies contain long-chain fatty alcohol radicles such as dodecyl. $C_{12}H_{25}$—, and so on. The following companies have patents dealing with the manufacture of fatty mercaptan compounds. Henkel et Cie, Ges. of Germany. Imperial Chemical Industries Ltd., of Great Britain, and the I. G. Farbenindustrie.

Here is a sequence of reactions giving one of the simpler organic sulfides which are said to have saponaceous properties. First, the dodecyl ester of chloracetic acid is prepared. The process is comparable with the formation of ethyl acetate except that dodecyl alcohol takes the place of ethyl alcohol, and Chloracetic acid is used.

$$\underset{\text{Acetic acid}}{CH_3.COOH} + \underset{\text{Ethyl alchol}}{C_2H_5OH} = \underset{\text{Ethyl acetate}}{CH_3.COOC_2H_5} + H_2O$$

$$Cl.CH_2.COOH + C_{12}H_{25}OH = \underset{\text{Dodecyl chloracetic ester}}{Cl.CH_2.COOC_{12}H_{25}} + H_2O$$

The chlorinated ester is now condensed with sodium phenyl mercaptan, C_6H_5SNa, with the separation of Na Cl, when the above sulfide is produced.

$$C_6H_5.S.---(Na.\ Cl.)---CH_2.COOC_{12}H_{25} = C_6H_5.S.CH_2.COOC_{12}H_{25} + NaCl.$$

Another sequence of reactions which gives ultimately fatty sulfides possessing saponaceous and emulsifying properties which may be used with advantage in the rubber and pharmaceutical industries is as follows:

First, the ethyl ester of chloracetic acid is prepared, which is condensed with dodecyl mercaptan and saponified to give sodium dodecyl-S-thioglycollate.

$$C_{12}H_{25}.S.Na + Cl.CH_2.COOEt = C_{12}H_{25}.S.CH_2.COONa + (NaCl, EtOh\ etc.)$$

While the above equations are given to make clear the probable course of the reaction, it must not be forgotten that secondary reactions may occur in actual practice and that the technical product is in most cases likely to contain several isomers and derivatives of other fatty alcohols other than C_{12}.

A somewhat more complex wetting agent which is claimed to have cleansing and emulsifying properties, is obtained by condensing monochlorhydrin with cetyl mercaptan in the presence of sodium and xylene. The resulting Beta-Gamma dihydroxy-propyl-cetyl sulfide is then sulfonated to give, presumably, a mono- or di-sulfuric ester.

$$\begin{array}{l} CH_2.Cl \qquad Na.S.\ C_{16}H_{33} \\ | \qquad\quad + \\ CH \qquad\quad H_2O + 2H_2SO_4 \\ |\!>O \\ CH_2 \end{array} \rightarrow \begin{array}{l} CH_2.S.C_{16}H_{33} \\ | \\ CH.O.SO_2.OH \\ | \\ CH_2.O.SO_2OH \end{array}$$

(*Turn to Page 67*)

HOUSEHOLD CLEANSERS

LONG since gone are the days when yellow soap was expected to do all the work of household cleansing, from washing dishes and clothes to scrubbing floors and woodwork. Nowadays, the housewife is offered a different product for every household cleansing purpose,—special floor scrubbing soaps, oxygenated and ammoniated soap powders, scouring pastes and powders, porcelain cleansers, glass cleansers, rug and upholstery cleaners, lavatory cleansers, and others,—each designed to do a special job of cleaning quickly, effectively, and with less labor. Truly, the market for new domestic cleaning specialties has grown with great rapidity during the past few years, and continues to expand as new products come onto the market almost daily.

So that the manufacturer in the United States may have an idea of the manner in which the cleaning specialty market is moving in the United Kingdom and on the Continent, the products which today lay the strongest claims to popularity and as a consequence sell in greatest volume, both old and new, will be discussed here in a general way with an eye to their composition, uses, and markets. Soap powders, scouring powders, scouring tablets, and scouring pastes will be taken up first. Comments made here may very well be considered in conjunction with the comprehensive article on "Scouring Powders" by Ralph H. Auch which appeared in the June, 1936 issue of *Soap*.

As far as can be determined the hard tablet of scouring soap originated in England some years back. Right now, these products are having a surprising revival of interest in the United Kingdom market. In the States, however, the market for these scouring bars has been almost completely supplanted by the powders, and the sale of bars today is almost nil, it is understood. Even more popular are some of the scouring pastes, which combine the advantages of suitable solvents with the detergent properties of soft soap and the abrasive action of pumice or silica.

Perborated soap powders are popular because they tend still further to whiten and bleach fabrics. Washing powders containing from 5 to 25 per cent of ammonium carbonate are also marketed, and experience considerable sales in cases

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where a deodorizing as well as a cleansing action is considered desirable.

Wool, silk, linen, cotton and the various artificial silks exhibit widely varying stability towards alkalies, so that a really useful washing powder requires very careful formulation. The bulk of such powders consist of ordinary soap, in association with sodium carbonate, sodium metasilicate, sodium bicarbonate, trisodium phosphate and borax, either alone or in combination.

Following are the composition, based on analyses of some typical clothes-washing powders. They are expressed in percentages by weight:—

	I	II	III	IV	V
Fatty acids	20	6	34	42	18
Sodium silicate	12	15	5	4	4
Sodium carbonate	26	42	26	22	30
Sodium bicarbonate	..	8	..	..	..
Sodium perborate	..	..	10	..	..
Trisodium phosphate	..	..	..	8	..
Borax	..	..	..	..	4
Water	42	29	25	24	44

The types of soap used in the production of such powders show considerable variation, but among the most commonly employed oils are to be found palm, palm kernel and

coconut. Powders for the washing of delicate fabrics are met with stern opposition by the more widely advertised soap chips, but are nevertheless popular in all cases where they dissolve quickly, clean thoroughly, and cause no damage. Good quality powders of this type consist essentially of a pure readily-soluble soap intimately associated with sodium perborate and other ingredients designed to improve the "oxygenating" action.

Washing powders for rougher household use (dish washing, etc.) are of a crude and more strongly alkaline type. Ammonium carbonate is also used in this connection, but in smaller quantities than for "ammonia powders" proper,—just sufficient, in fact, to give off a faint ammoniacal odor. Colloidal clays and bentonite have been tried out as additional ingredients, but although quite successfully used in a few brands of washing powder, they have not thus far met with the enthusiasm that has marked their entry into other branches of the detergent industry. They can, however, be recommended for incorporation in household scouring powders of the milder type,—such as may be used for cleaning baths, paintwork, etc.

Omitting any detailed consideration here of scouring powders, attention will be confined to (a) paste scourers and (b) scouring tablets based on suitable abrasives, sodium silicate and soap. Analyses undertaken by the writer show that scouring pastes consist of soap and an abrasive material, a suitable solvent or soda ash being occasionally incorporated. A paste of attractive consistency may also be made up by using a vanishing cream base of the familiar stearic acid, water, and caustic soda type, adding to it about 1 or 2 per cent by weight of soda ash and stirring in a sufficiency of amorphous silica or off-white tripoli. If kieselguhr is used instead, the resulting paste should be tinted a suitable shade of pink.

The simplest form of paste detergent is found on analysis to consist of 10 parts by weight of tallow — coconut or palmkernel — white grease soaps, 20 parts of water and 70 parts of 140 or 200 mesh ground silica. These, of course, are approximate figures. It is important to have the mixture of such a consistency as to prevent settling out of the abrasive in the can.

In general, however, scouring pastes of a better quality are made quite simply by mixing together powdered pumice or other abrasive, soft soap, and a suitable solvent. Possible solvents are cyclohexanol, methyl cyclohexanol, carbon tetrachloride, turpentine, kerosene and gasoline. The method of compounding is not difficult, the soft soap and pumice being mixed to a stiff paste, and the solvent worked in, the quantities of the ingredients being adjusted to the texture required.

An interesting variation of this type of scouring paste has been suggested, based on the substitution of triethanolamine stearate for the soft soap, but this seems to be one of those cases in which soft soap can still lay claim to superiority. An addition that is, however, welcomed in certain quarters, is the incorporation of sufficient cresylic acid to impart the desired "hygienic" odor. Such a paste as the foregoing, if a fine-mesh abrasive is used, is likely to prove exceedingly popular as a remover of dirt and grease from the hands, as well as for general purposes such as cleaning woodwork, tile, pots and pans, etc.

Scouring soap in tablet form has for years been a useful household requisite if properly manufactured. It must, at the same time, be stated that a good scouring soap is not at all easy to produce. Quite apart from the problems involved in correctly adjusting the proportions of soap, moisture, abrasive and other ingredients (if any), it is a well-known fact that the stamping equipment employed in producing the finished tablets is subject to extremely heavy wear-and-tear.

The following formula gives a good laboratory imitation of one of the most widely sold scouring soaps on the market. Considerable adjustments would need to be made, of course, for manufacture on a commercial scale, but the formula nevertheless gives a very sound idea of the balance of constituents:

Ground silica (140 mesh)	45 oz.
Kieselguhr	5 oz.
Oleic acid	15 oz.

These are mixed intimately together. Then the following is added all at once:—

Sodium silicate solution	1 oz.
Caustic soda	1 oz.
Water	7.5 oz.

On a commercial scale, the drying process is also quite tricky. In fact, an unusual degree of care has to be bestowed on stamping and drying problems, if the finished tablet is to show no marked signs of crumbling or flaking. Due to the fact that the soap serves as a binding agent as well as a detergent, it is required to be of a rather plastic character, and is therefore conveniently made on a tallow or grease-coconut oil basis. Rosin soaps are also used in the United Kingdom for the purpose, but this is apparently at variance with the U. S. Federal Specifications, which say that "grit soaps" shall not contain rosin. A further point that we may note is that a small addition of sodium silicate definitely improves the appearance and action of scouring soaps in bar or tablet form.

THERE are numerous problems connected with the manufacture and marketing of a product designed to clean floors, not the least of them arising from variations in the floors themselves and essential differences in their chemical and physical constitution. Thus we find rigid floorings such as marble, wood and tiles and resilient floorings such as rubber and linoleum, all of which, if at all possible, are to be cleaned and renovated by a single satisfactory floor scrubbing preparation.

Of course, the original type

of marble cleaner (known also as a mopping compound) is quite simple in constitution, although its applicability is strictly limited to marble and terrazzo floors. A typical hard floor cleanser of this class has been found, on analysis, to have an approximate composition as follows: Finely levigated silica 28 per cent, hydrated soda ash 58 per cent, powdered soap 14 per cent. Modifications of this type of formula would include small additions of trisodium phosphate, substitution of volcanic ash, tripoli or amorphous silica for part or all of the ground silica used, and, if desired, the inclusion of up to 25 per cent of precipitated chalk.

The limitations of this type of product are only too obvious. As one manufacturer complained recently, there is a tendency under certain conditions for such compounds to leave a streakiness or greyness behind on tile, marble and rubber surfaces. Actually, a powder of this sort is altogether unsuited to the requirements of a rubber floor, while the streakiness on stone, marble and tiles is probably due to too coarse a grade of silica or an insufficiency of soap to buffer its action. In the case of marble, moreover, it is frequently undesirable to use an abrasive of any kind. In some cases, a polish of the following type gives much more satisfactory results; 1 lb. of beeswax, 4 oz. of carnauba wax and 4 oz. of gold size, dissolved in 1 1/6 gallons turpentine. The gold size is a standard mixture of 2 parts copal varnish, 1 part yellow ochre, 4 parts turpentine and 8 parts boiled linseed oil.

In search of the ideal floor scrubbing preparations, we must turn, however to the potash soaps, either plain or with such additions as 2 or more per cent of pine oil. Any added ingredients should take into account the fact that finished products with a definitely alkaline reaction are quite unsuitable for use on linoleum; also that rubber tiles are apt to swell and buckle up when brought into contact with essential oils, chlorinated hydrocarbons, petroleum distillates, etc. In the writer's opinion, the best type of "all-floor" cleanser must inevitably be of a safe and straightforward character, such as a potash-vegetable-oil liquid soap containing not more than 2 per cent of pine oil or about 2 to 5 per cent of one of the hydrogenated aromatic bodies such as cyclohexanol. The following formula indicates the composition of a typical floor scrubbing liquid of the kind indicated (by weight):

Coconut Oil	6. parts
Soya Bean Oil	12. parts
KOH (50% sol.)	9.6 parts
Glycerine	4. parts
Cyclohexanol	3. parts
Pine Oil	2. parts
Water	63.4 parts

THE sale of cleaning fluids have been maintained at a fairly steady level over the past ten or twenty years, and, compared with many other household requisites, they have changed very little in constitution or appearance. The majority of cleaning fluids are based on mixtures of suitable grease solvents, such as carbon tetrachloride, deodorized kerosene, benzene, naphtha, ether, alcohol and chloroform,—the most used of these being nearly always carbon tetrachloride.

An old-fashioned type of product that bridges the gap between such simple cleaning fluids and the modern solvent-containing liquid soaps is generally known as a "renovator". The merchandising claims for this class of preparation run somewhat as follows: "An invaluable household requisite. Removes stains. Renovates carpets, clothes, fabrics of all kinds. Cleans paintwork and windows, etc., etc." In constitution, such "renovators" are essentially based on an aqueous solution of soft soap mixed intimately with liquid ammonia, alcohol and ether.

In accordance with a somewhat more advanced technology, these preparations have in some instances been modified considerably to consist essentially of a liquid soap plus one or more of the newer solvents and, of course, water. This gives excellent grease and dirt removing liquids. The chlorinated hydrocarbons such as dichlorethylene, trichlorethylene and carbon tetrachloride are of considerable utility in this respect, owing to their non-inflammability. The same applies also to those well-known hydrogenation products, cyclohexanol, methyl cyclohexanol and tetrahydronaphthalene. These all give good clear liquid soaps or jellies, if correctly employed. A typical formula will thus read approximately as follows:—liquid soap, 30 per cent, water 60 per cent, and the balance solvent.

Bleaching liquids are not now so widely used in the home in England as formerly, but it is interesting to note that Eau de Iabarraque (sodium hypochlorite solution) and Eau de Javelle (equal parts of calcium hypochlorite and potassium carbonate in water), still retain a certain measure of popularity. Either of these, with the addition of a little glycerin and alcohol, is also useful for packing as a straw hat cleaner and renovator, but in this case another bottle should also be packed with it, containing a dilute citric acid solution, to be applied to the hat 24 hours after the first solution has been brushed over it.

Another important domestic cleansing liquid that probably experiences a more widespread and enduring popularity than any other, is household ammonia. This is of course essentially an aqueous solution of ammonia containing also a proportion of soap and sometimes a trace of potassium carbonate. The choice of soap is of some importance, preference usually being extended to a good potash soft soap or, less frequently, castile.

DRY cleaning soaps as used by professional cleaners fall rather outside the scope of the present discussion, but special carpet and glove soaps experience a constant though limited appeal to the housewife. Herbert Kranich stated in SOAP (July, 1935):—"Upholstery and rug cleaners in which

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ACTIVATED CARBON

ACTIVATED carbons have received almost universal acceptance throughout the field of oil and fat refining, and find application in practically every type of edible oil and many types of inedible oils. The prime purpose for which activated carbons are used in the oil and fat industry, is to accomplish decolorization, deodorization, and greater stability of the oils through purification. Each of these results are of considerable importance to the oil refiner, regardless of the type of oil being treated. Color standards for oils and fats have been set up, and it is, therefore, of great importance that a special degree of decolorization be obtained in order at least to meet these standards. Individual refiners quite often set their standards of color much lower than the usually accepted standards, thus requiring the use of higher proportions of decolorizing mediums and very close control of the oil throughout the entire refining operation.

The odor and flavor of an oil is usually more important than the color, since any off-flavor in the oil will make it unsaleable except at considerably reduced prices. In this connection activated carbons have played a very important role of removing off-odors and flavors from oils and fats, to such an extent that off-oils have been rendered entirely suitable to the trade.

The stability of an oil or its ability to maintain a satisfactory flavor and odor over long periods of storage is also a problem of paramount importance to the oil refiner. A number of tests, such as the Kreis Test and Peroxide Test, have been developed as a means of determining whether or not an oil is rancid. Undoubtedly all of these tests, so far developed, have certain drawbacks in that they do not always give a true indication of the ultimate stability of the oils tested under the conditions to which the oils may be subjected. On the other hand, various tests for rancidity do have sufficient merit so that they are sometimes used as standards of quality whereby an oil may be accepted or rejected, lacking more perfect means of evaluation.

It is not the purpose here to discuss the various testing methods for stability, but merely to point out that the flavor, odor, and stability of an oil is of sufficient importance to the refiner to warrant the great amount of work which is now being done on the development of such testing methods.

Activated carbons have been of considerable assistance to refiners in the production of acceptable grades of oil. In some cases an oil showing positive rancidity, as measured by the Kreis Test, has been treated with activated carbon, thus obtaining an oil which was acceptable to the trade, as measured by this same test. Some refiners have found this characteristic of activated carbons of considerable value to them in reducing the amount of rejected shipments and, consequently, have adopted the practice of using activated carbon on all oils going through the plant. It is felt that such a benefit to the oil is of

in Oil and Fat Purification

By E. A. Sigworth*

sufficient importance alone to warrant the use of carbon in all oils for the savings in fewer rejected shipments more than make up for the cost of the carbon. For this reason, the benefits of carbon treatment must not be looked upon solely as improving the color. Improvement of flavor, odor and purity should be considered of prime importance and the additional improvement in color more as an incidental benefit.

Although activated carbons are used on oils in essentially the same way, regardless of type, there are occasionally a few cases where special methods are employed. By far the most common procedure is to use activated carbon in the so-called clay kettle. The procedure is very simple, merely consisting of pumping the oil to the kettle, heating the oil to the desired temperature and then adding the proper proportion of activated carbon, either with or without fullers earth or bleaching clay. The mixture is then agitated for a sufficient period of time, this usually being 15 to 30 minutes, after which the oil is filtered.

For the most suitable conditions of treatment the clay kettle should be equipped with closed steam coils, for heating the oil to the desired temperature, and paddles for mechanical agitation. In a number of cases it has been found advantageous to carry on the decolorization and purification with activated carbon under a vacuum, so that for the best conditions, arrangements should be made for maintaining a vacuum on the clay kettle. The advantage of carrying on bleaching operations under a vacuum is fairly well established in the oil industry, as it reduces the possibility of contamination from the atmosphere and oxidation reactions.

The filtration operation should be carried on with considerable care to insure the complete removal of carbon and clay from the oil. The filter press ordinarily used for fat and oil work is a standard recessed plate, open delivery press. Plate and frame, and Sweetland type filters are also very often used. The press is usually lined with a special quality of duck and sometimes with filter paper, when quick and complete clarity is desired. The present trend in oil refining is to use every practical means to minimize oxidation. Consequently, some refiners have adopted a closed delivery type filter press equipped with sight glasses, thus eliminating contact of the oil with the air as it leaves the filter press. If such a filter is employed, it is advisable to use an inert gas instead of air during the blowing operation.

When the filter press is first placed in operation, it is recom-

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mended that the first oil delivered from the press should be returned to the clay kettle or mixing tank. This recirculation procedure is recommended because the first flush of oil through the filter will carry with it fine particles of clay or carbon. This recirculation procedure should be carried on for a sufficient period of time to enable a good cake to be formed on the filter cloth. In actual operation, the period of time involved will vary from 5 to 15 minutes, but a close observation of the filtrate is recommended, and that recirculation be continued for at least two, and preferably five minutes after the oil appears to be coming through clear.

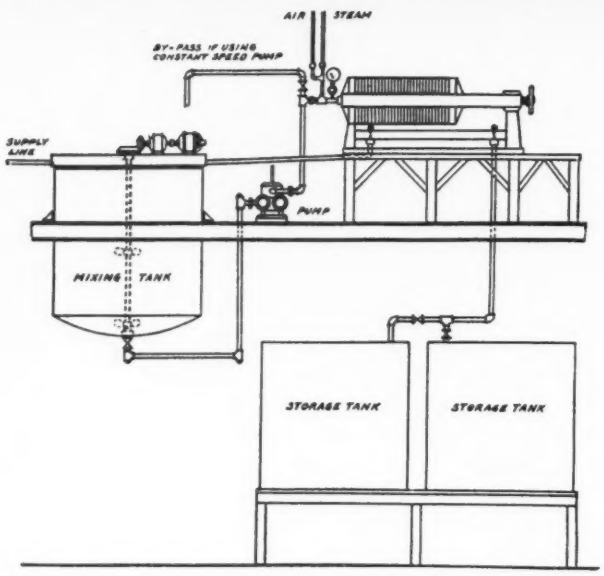
The use of diatomaceous earth for the formation of a precoat on the filter cloths is of considerable advantage and is certainly to be recommended in the filtration of oils and fats. The procedure consists of adding the proper proportion of diatomaceous earth (10 to 20 lbs. per 100 square feet of filter area) to a quantity of oil sufficient to more than fill the filter press. This mixture is agitated and pumped into the filter press, returning the oil to the mixing tank. Circulation in this way is carried on until all of the earth is carried into the press and the filtrate is coming through clear. Following this precoating operation, the treated oil is pumped through, preferably without interrupting the flow of oil through the press. This precoating procedure results in less circulation of the treated oil and longer life of the filter cloths.

Activated carbon has been applied to oils at various stages in the refining operation, such as to the crude oil, to the refined oil and to the deodorized oil.

Application to Crude Oils

APPLICATION of activated carbon to crude oils, regardless of type, has been frequently practiced. However, the greatest amount of work has been done on crude cottonseed oil, and this particular oil will therefore be discussed. When activated carbon is applied to crude cottonseed oil, it removes resins, phosphetids, and other colloidal impurities, thus reducing the emulsion of whole oil in the soap stock during the process of neutralizing the free fatty acids. On prime crude oil, an average reduction of about 2.5 points total refining loss and color is effected. Oil so treated is purified, sweetened, and completely dried, and may be safely stored over a long period of time without fermentation or decomposition.

TYPICAL LAYOUT FOR ACTIVATED CARBON PROCESS



Application to Refined Oils

ACTIVATED carbon is more generally applied to oils after the crude oil has been refined by caustic soda for neutralization of free fatty acids. Refined oils and fats can be divided into two classes: first, those upon which carbon alone is a sufficient decolorant, namely, pure lard, coconut oil, palm oil, palm kernel oil, etc. Second, those upon which carbon is used in conjunction with fullers earth or other earths in order to obtain the desired color.

In the first class above mentioned, experiences have indicated that carbon alone is sufficient to accomplish satisfactory treatment of the oil economically. Occasionally, fullers earth is also used in small proportions along with carbon in order to aid in the operation of the filter press. However, in some cases, it has been reported that the presence of even small amounts of fullers earth in such oils makes the decolorizing with activated carbon more difficult. Under such circumstances, it is to be recommended that diatomaceous earth be used as an aid in filtration, thus eliminating fullers earth completely.

The second classification includes such oils as cottonseed, soya bean, corn, etc., and includes by far the greater amount of the edible type vegetable oil. On these oils the color is characteristically dark, possessing an excess of reds, yellows and sometimes greens, and it is advisable to use fullers earth in conjunction with activated carbon in order to obtain the desired degree of decolorization. The following table is included to give some idea as to the proportions of carbon, or carbon and clay, most commonly employed for certain types of oils.

The proportions given are average for actual operating conditions in the plant and are therefore not to be considered as applicable in

PRODUCT	Decolorizing Solids Recommended	Pounds of Carbon per 100 pounds of oil	Pounds of Earth per 100 pounds of oil	Temperature of Treatment °Fahr.*
Refined Cottonseed Oil	Carbon plus Earth	0.1	1.5	180-220
Peanut Oil	Carbon plus Earth	0.2	0.2	180-220
Soya Bean Oil	Carbon plus Earth	0.5	2.0	180-220
Corn Oil	Carbon plus Earth	0.2	1.0	180-220
Linseed Oil	Carbon plus Earth	0.2	1.5	160-180
Castor Oil	Carbon plus Earth	0.2	1.5	180-220
Olive Oil	Carbon plus Earth	0.1	1.0	120-140
Coconut Oil	Carbon	0.5	0	180-220
Palm Oil	Carbon	0.5	0	180-220
Palm Kernel Oil	Carbon	0.5	0	180-220
Rape Seed Oil	Carbon plus Earth	0.5	2.0	180-220
Lard	Carbon	0.5	0	160-180
Tallow	Carbon plus Earth	1.0	3.0	180-220
Greases	Carbon plus Earth	1.0	3.0	180-220

* If open tank is used. Where vacuum decolorizing tanks are used, better results with lower treating temperatures are possible.

every case. Naturally, the proportions must be increased or decreased depending upon the individual characteristics of the oil being treated. It should be emphasized that in the case of laboratory work, these proportions will have to be doubled or possibly tripled in order to obtain results that will be comparable to those in actual plant operations. The reason for this is that much better results are accomplished in large scale operation than in small laboratory tests.

In the Deodorizer

SOME vegetable oil refiners have found the application of activated carbon in the deodorizing tank to be very desirable. Application in this way gives a fine finish to the oil, improves and stabilizes the color, reduces the fatty acids, and, best of all, it produces an absolute neutrality of taste and odor, which is impossible with steam distillation alone. The operation of the deodorizer is not changed in any way by the presence of activated carbon in the oil, as it is merely removed in the filtration operation following the deodorizing kettle. In some cases, where it has been difficult to apply activated carbon in the deodorizing tank itself, refiners have accomplished treatment by coating the finished oil press with the carbon.

With Drying Oils

IN the treatment of these oils, bleaching clay alone is sufficient to accomplish decolorization of the refined oil. However, when bleaching clays alone are used, the oils have a tendency to darken during the subsequent boiling operation. Consequently, refiners have adopted the practice of using a small amount of activated carbon at the same time as the bleaching clay, not only to improve the color of the refined oil, but also to minimize the darkening tendency during boiling operations. On these oils it has been found that a proportion of 1/10 to 1/4 per cent of activated carbon is sufficient to accomplish the desired results.

Cocoa Butter

THE processes followed in expressing cocoa butter, together with the quality of the beans, are responsible for off-flavors and odors in cocoa butter. The Dutch process is a notable example of such impairment to the butter. Activated carbon has been found very successful for correcting this off-flavor and odor in cocoa butter. The temperature of the cocoa butter as it is discharged from the presses has been found to be a satisfactory one for treatment. Approximately 1/8 per cent of activated carbon is added to the butter. Thorough agitation follows for 15 to 30 minutes, after which the carbon is filtered from the cocoa butter. In the treatment of this product, extreme care should be taken as to the proportions of carbon employed. A slight amount of variation in the above figure is possible, but it should be remembered that too small a proportion will not give sufficient removal of the off-flavors and odors, whereas too high a proportion may not only remove the off-flavors, but also some of the natural flavor, thus giving a bland taste to the cocoa butter. It is therefore advisable, where possible, to determine by laboratory tests the most suitable proportion to use.

Off-colors in cocoa butter can also be eliminated simultaneously with the improvement of odor and flavor. If color removal is of prime importance, extreme care should be taken in the proper selection of the quality of activated carbon. Under such conditions, highly activated qualities are desirable as high proportions of less active carbons adversely affect the natural flavors and odors in the butter.

Animal Fats

CONSIDERABLE progress in the treatment of animal fats has been accomplished within the past few years. Of greatest importance is the new rendering process for lard, which has been described as a drip rendering process. This method involves rendering of fats out of contact with the tissue, bone, etc. It also makes possible the rendering, decolorizing, deodorizing, and neutralizing of the lard in one simple process through the application of activated carbon and sodium bicarbonate to the freshly produced lard as it drips free of the tissue (cracklings). The principle involved in this method of rendering is the draining of the rendered fat from the cracklings as quickly as possible, thus largely keeping the rendered fat from taking up the odor of cooked cracklings. This improved method of refining combined with subsequent treatment mentioned above enables the refiner to produce an exceptionally high quality of lard. The various qualities of the lard thus improved are color, odor, flavor, smoke-point, and stability.

Activated carbon can also be used very successfully in the treatment of lard refined by the other various methods, such as wet rendering.

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New Proposed Specification for

SOFT AUTO SOAP

A PROPOSED revision of the specification for *soft* automobile soap for U. S. Government purchases has been prepared by the Technical Committee on Detergents of the National Bureau of Standards to take the place of Federal Specification P-S-561, dated Oct. 14, 1930, for automobile soap. Comments and criticisms are requested from soap manufacturers and others by F. W. Smither, chairman of the committee, who may be communicated with at the National Bureau of Standards, Washington, D. C. Two types of soft soap are called for in the specification, Type I, ordinary paste soap, the alkali content of which is not specified, and Type II, which specifies an all-potash soap. No specification for hard automobile soap is included.

The specification* in detail follows:

Proposed revision of federal specification for soap, soft; for cleaning automobiles and for general cleaning: This proposed specification is submitted as a proposed revision of Federal Specification P-S-561 for "Soap; Automobile", dated October 14, 1930.

A. Applicable Federal Specifications

A-1. The following Federal specification of the issue in effect on date of invitation for bids shall, in so far as applicable, form a part of this specification:

P-S-536—Soap and Soap-Products; General Specifications (Methods for Sampling and Testing).

A-2. Any special requirements of the individual departments of the Government are noted under Section H.

B. Types

B-1. Soft soap shall be of the following types, as specified:

Type I—Ordinary paste soap.

Type II—Straight potash soap.

C. Material

C-1. Soft soap shall be a uniform gel or paste soap made solely from whole neutral vegetable oils and alkali. In the case of Type II the alkali shall be potash only. Soft soap shall be as specified hereinafter for each type.

D. General Requirements

D-1. Soap, soft; for cleaning automobiles and for general cleaning.

D-1a. Consistency, color and odor. (Types I and II). The material shall be a uniform translucent, firm gel or paste of a yellowish-white to brownish-yellow color. The odor shall not be objectionable in the soap as received or in a hot solution of the soap in water. The material shall not leave an objectionable odor on surfaces after washing with a water solution of the soap and rinsing thoroughly with plain water. Unless otherwise specified, each bidder shall submit with his proposal a one-quart sample of the soap that he proposes to furnish, packed in a screw top glass jar, to show odor, color, and consistency. The sample so furnished shall be kept for comparison with samples from deliveries. (See paragraph F-1a).

D-1b. Moisture (by Xylol Distillation Method).—Moisture in each type shall not exceed 55 per cent. Deliveries which yield more than 55 per cent of moisture shall be rejected without further test.

D-1c. Solubility and Sudsing.—The soap of each type shall dissolve readily to give a 0.15 to 0.2 per cent solution, using distilled water at 15.5 to 20°C. (60° to 68°F.). The solution so prepared shall yield a good suds.

D-1d. Keeping Qualities.—The material of each type shall not become rancid or otherwise deteriorate when kept in a closed container.

E. Detail Requirements

E-1a. The material shall conform to the detail requirements for the type indicated as in the table below.

E-1b. Computation.—The percentage of moisture shall be computed for each type, and reported by the testing laboratory, on the soap as received. The percentages of all other constituents in each type shall be calculated and reported on an assumed moisture content of 50 per cent. For basis of purchase, see paragraph I-2.

F. Methods of Sampling, Inspection and Tests

F-1. Any requirements of the individual departments are noted under Section H.

F-1a. The inspector or purchasing officer shall determine whether or not the material of each type is satisfactory as regards odor, color and consistency. If unsatisfactory the material should be rejected and not sub-

	TYPE I		TYPE II	
	Minimum Per Cent	Maximum Per Cent	Minimum Per Cent	Maximum Per Cent
Moisture (xylol distillation method)		55		55
Sum of free alkali and total matter insoluble in alcohol		1		1
Chloride, calculated as potassium chloride (KCl)		0.5		0.5
Free alkali, calculated as potassium hydroxide (KOH)		0.1		0.1
Free acid, calculated as oleic acid		0.2		0.2
Matter insoluble in distilled water		0.2		0.2
Unsaponified matter		2		2
Anhydrous soap, calculated as potash soap	43		43	
Total sodium compounds, calculated as Na_2O				0.5
Glycerol	4		4	
Iodine number (Wijs) of mixed fatty acids derived from the soap	100	150	100	150
Acid number of mixed fatty acids derived from the soap	197	205	197	205
Rosin		none		none
Sugar		none		none

* Note: This specification has not been adopted or approved, and is subject to further revision.

mitted to the testing laboratory for the tests referred to under Section F-2. (See paragraph D-1a).

F-2. Deliveries will, in general, be sampled and tested according to the methods contained in Section F of Federal Specification P-S-536. However, the Government reserves the right to use any additional available information to ascertain whether the material ordered meets the specification.

G. Packaging, Packing and Marking

G-1. Any special requirements of the individual departments are noted under Section H.

G-2. Packaging.—Unless otherwise specified, commercial packages are acceptable under this specification.

G-3. Packing. — Unless otherwise specified, the subject commodity shall be delivered in standard commercial containers, so constructed as to insure acceptance by common or other carriers, for safe transportation, at the lowest rate, to the point of delivery.

G-4. Marking. — Unless otherwise specified, shipping containers shall be marked with the name of the material, and the quantity contained therein, as defined by the contract or order under which the shipment is made, the name of the contractor, and the number of the contract or order.

H. Requirements Applicable to Individual Departments

H-1. The following Departmental specifications of the issue in effect on date of invitation for bids shall form a part of this specification.

H-1a. Army: U. S. Army Specification No. 100-2, Standard Specification for Marking Shipments.

H-1b. Navy Department General Specifications for Inspection of Material (copies of which may be obtained without cost upon application to the Bureau of Supplies and Accounts, Navy Department, Washington, D. C.).

H-1c. Marine Corps: Instructions issued by the Quartermaster.

H-2. Navy Departmental Purchases.

H-2a. Soap, soft, shall be furnished either in cans or cartons of 5 pounds or less, as specified, these cans or cartons being packed in strong wooden cases, or in substantial and uniform barrels of the usual commercial size.

H-2b. Each case or barrel shall be marked on at least one end with name of material, net weight, name of contractor, and contract or requisition number under which delivery is made.

Example:

Soap, Soft
Net Weight.
R. G. Brown & Co.
Contract No. 23456

H-2c. Soap, soft, when delivered must be in strict accordance with specifications. Failure to meet any of the requirements of the specifications shall be cause for rejection.

I. Notes

I-1. Purchasers should specify the type required.

I-2. Basis of Purchase.—Soft soap of each type should be purchased by net weight. Soft soap is subject to a possible gain or loss of weight, depending upon packaging, atmospheric and/or storage conditions. Therefore the time of computing net weight with reference to acceptance or delivery should be specified in the contract or order.

I-3. Bidder should state size and weight of his unit.

I-4. Purchasers should specify if a mutually agreed upon sample is desired for comparison with deliveries for odor or color. (See paragraphs D-1b and D-1c).

I-5. The inspector or purchasing officer should determine whether or not the material is satisfactory as regards odor and color. If unsatisfactory the material should be rejected and not submitted to the testing laboratory for test. (See paragraphs D-1b and D-1c.)

I-6. Federal Specification P-S-536, for "Soap and Soap-Products; General Specifications (Methods for Sampling and Testing)", can be procured at five cents per copy from the Superintendent of Documents (see paragraph I-9).

I-7. It is believed that this specification adequately describes the characteristics necessary to secure the desired material, and that normally no samples will be necessary prior to award to determine compliance with this specification. If, for any particular purpose, samples with bids are necessary, they should be specifically asked for in the invitation for bids, and the particular purpose to be served by the bid samples should be definitely stated, the specification to apply in all other respects.

I-8. An Alphabetical Index of Federal Specifications may be purchased as noted in the paragraph next below, price to be obtained from the Superintendent of Documents.

I-9. Copies of this specification may be obtained upon application, accompanied by money order or coupon, or cash, to Superintendent of Documents, Government Printing Office, Washington, D. C., price —— cents.

Notice: When Government drawings, specifications, or other data are used for any Government procurement operation, the United States Government thereby incurs no responsibility or any obligation whatsoever; and the fact that the Government may have formulated, furnished, or in any way supplied the said drawings, specifications, or other data is not to be regarded by implication or otherwise as in any manner licensing the holder or any other person or corporation, or conveying any rights or permission to manufacture, use, or sell any patented invention that may in any way be related thereto.

Oil Bleaching Agents

In order to tell whether a bleaching material is one that is naturally active, one that has been activated with acid, or one that is mixed with carbon, the procedure is to test it with from 1 to 5 kilograms of the oil to be bleached. In this way the refiner can estimate the bleaching activity of the material and also the amount of oil which it will adsorb. The oil must be thoroughly dry to start with. The mixture of earth and oil is stirred for a half hour at 90-100°C. and filtered. The speed of filtration and clarity of the filtered oil have a bearing on the amount of oil adsorbed. When using this small amount experimentally, a practical means of determining the extent of oil adsorption is to weigh the filter plus bleaching earth before and after filtration. The increase in weight will represent the amount of oil adsorbed. The degree of bleaching is best determined by means of a Lovibond tintometer, in which the bleached oil can be compared with a standard oil whose color it is desired to duplicate.

Activated carbon greatly increases the activity of bleaching earth and is generally used in a proportion of 1 part of carbon to 8 or 9 parts of the earth, for bleaching oils. Various patents exist for the purification and recovery of the bleaching agents. One is to treat with 3 per cent of calcined soda ash and 5 per cent of sodium chloride in water in an autoclave. Another is to boil at ordinary pressure with a salt solution such that the amount of salt is 4-6 per cent of the mixture. The oil comes to the surface on cooling. Still another method is to heat with a solution of lye, then treat with salt to salt out the soap formed. Other methods include the use of solvents for removing the oil, but these require special apparatus. *Seifensieder-Ztg.* **64,** 376-7, 395-6, 411-13 (1937).

New Products

Vanish is a new product just put on the market by The Expello Corporation of Dover, N. H.,—a toilet bowl cleaner in a 25 cent introductory combination package with sample and regular size cans. Black lithographed can, white lettering.

◆

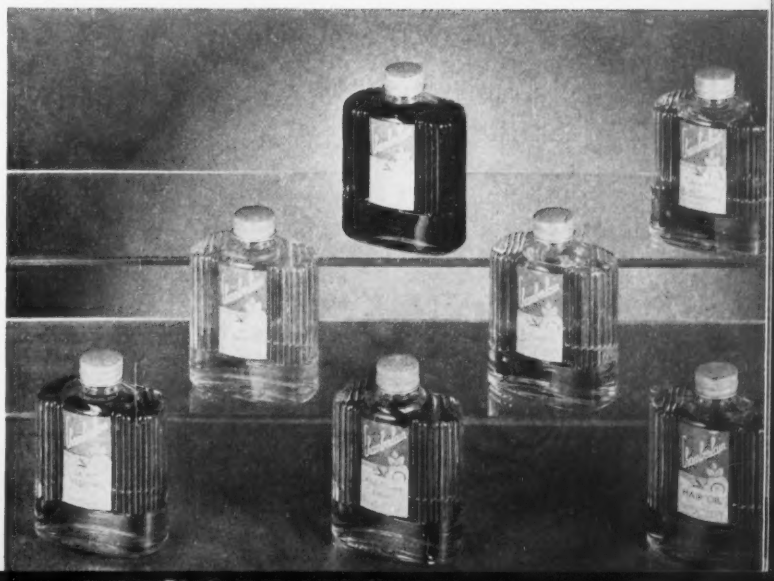
A deep orange and black color combination gives a striking new container for the small packages of Buckingham No-Rubbing Wax,—made by Buckingham Wax Co., Long Island City. Can by Cordiano of Brooklyn.

Two new bath oils in new type containers for such products,— little brown jugs stoppered with Armstrong embossed corks. Mecca with silver label and green cord; Carmellia with gold cord and label. Both by Mecca Sales Company of Cleveland.

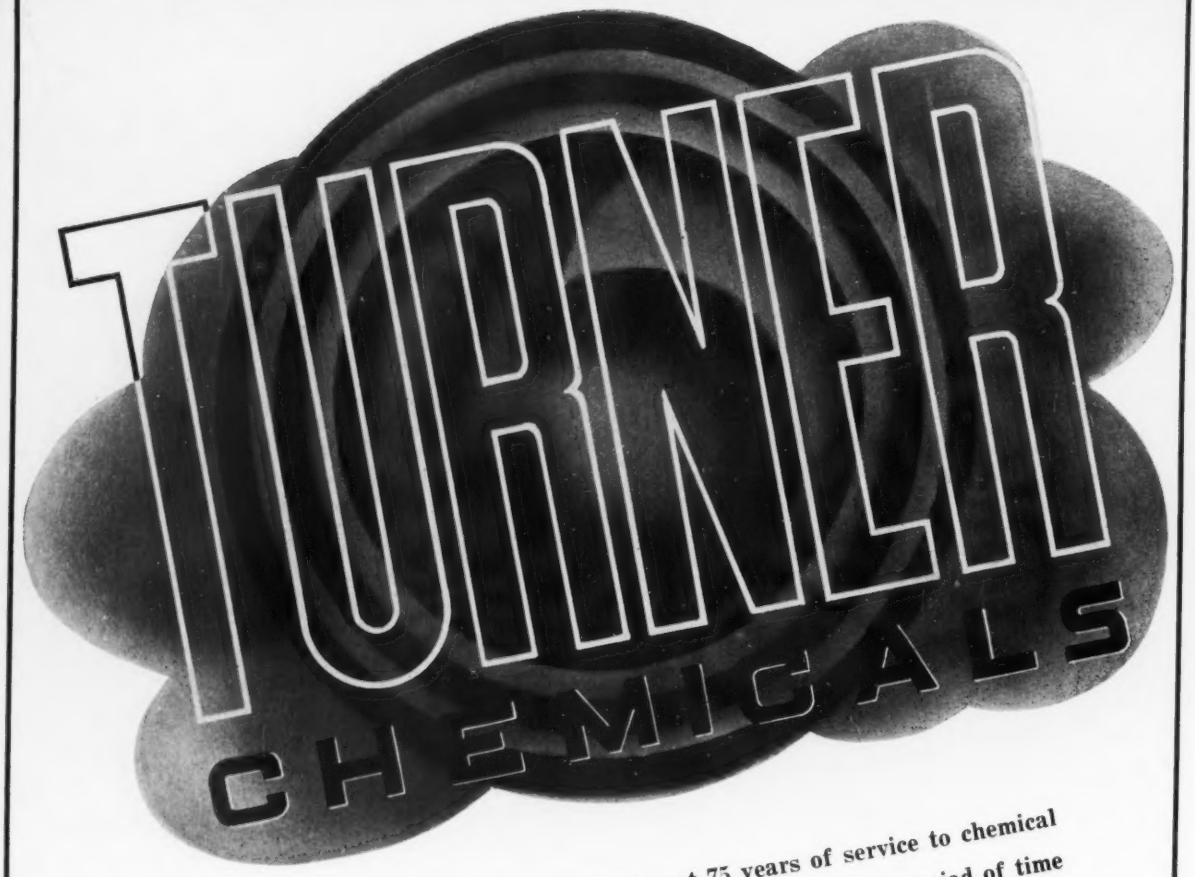
and Packages

The height of Roman Cleanser bottle is reduced and its style changed, — plus a screw cap and amber-colored glass — marked package improvements in the well-known product made by Roman Cleanser Manufacturing Co. of Detroit.

Watkins Auto Polish is a newcomer in the line of J. R. Watkins Company of Newark and Winona, Minn. Watkins floor wax formerly sold in bottles is now packaged in the standard lithographed can,— a move following increased sales. Cans by American Can.



Shampoo, After-Shave Lotion, Hair Tonic, and other items of the "Chamberlain" line of the F. B. Chamberlain Company of St. Louis,—recently repackaged in a new style bottle for the whole family of product. Bottle by Owens-Illinois.



The house of Turner has rounded out 75 years of service to chemical buyers. The wealth of experience gained over this long period of time insures your receiving a uniform product of the highest standard at the lowest possible cost. Concerning service—since moving into our new Distribution Center in Ridgefield, New Jersey, 3½ miles from the Hudson River in the heart of the industrial East, we are in a position to give our customers the best possible service.

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CAUSTIC SODA
CARBONATE OF POTASH
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NEWS . . . . . .

A. F. of L. Loses Kirkman Vote

A vote held at the Brooklyn plant of Kirkman & Sons, July 14th, under the supervision of the National Labor Relations Board, resulted in the overwhelming defeat of Cosmetic Soap & Perfumery Workers Union, Local No. 20646 of the American Federation of Labor. The question on which the Kirkman workers voted was simply whether or not the A F of L union should be empowered to represent Kirkman workers in labor negotiations with the management. The vote was approximately three or four to one against the designation of this union.

West Coast Soap Head Dies

Fred Reinle, president of West Coast Soap Co., Oakland, Calif., died last month. His position as head of West Coast Soap Co. will be taken by his brother, Dr. George G. Reinle, a well-known physician on the west coast and a past vice-president of the American Medical Association.

P & G Buy London Property

Procter & Gamble Co., Cincinnati, has just acquired a tract of land near London, England. No plans have as yet been announced for possible plant construction. P & G already operate two plants in England, one at New Castle having been in operation since 1930, and the other at Manchester, having been in operation since 1932.

FTC Cites Avocado Soap

Avocado Soap Products Co., Anaheim, Calif., has just been cited in a U. S. Federal Trade Commission complaint charging misrepresentation in the sale of its soap. Advertising literature is alleged to have created the impression that the concern's soap contains a substantial amount of avocado oil; that this soap is nature's aid to beauty and is highly recommended by beauty specialists. These allegations are not true, the complaint charges. The amount of avocado oil contained in the respondent's soaps is infinitesimal when compared to the amounts of other ingredients therein, the complaint states. Such amount is not sufficient to warrant the assertion that the soap is made from avocado oil, according to the commission.

Fire at Canadian Soap Plant

Considerable damage was done by fire July 20 to the plant of Canadian Soap and Chemical Co., 1353 Notre Dame Street East, Montreal. The fire started at the bottom of an elevator shaft and the flames shot up to the roof before the firemen could check them.

R. W. Russell Dies

R. W. Russell, treasurer and general manager of Andrew Jergens Co. of California, Burbank, Calif., died July 11. J. D. Nelson of Jergens Co., Cincinnati, left for the coast shortly after receiving word of Mr. Russell's death to arrange for some one to take over his duties.

Soap Employment Declines

The index of employment in the soap industry, as compiled by the U. S. Department of Labor, registered 104.3 for May, 1937, a moderate drop from the April mark of 107.6. It compares with 95.8 for May, 1936. The payroll index also registered a decline in May, 1937, reading 113.4 as compared with 116.4 for April and 93.9 for May, 1936. All figures are based on the average for 1923-1925 as 100.

Offer Soap as Premium

Wiggins Chemical Co., Cincinnati, is attempting to boost sales of its "Wigg's" waterless cleanser in the Richmond, Va., district by offering "Octagon" soap with its own cleanser in a special deal. Local chain stores are advertising two bars of "Octagon" soap free with one five-pound can of "Wigg's" cleanser, priced at 89c.

Lea Bill Exempts Soaps

All reference to soaps has been eliminated from the latest draft of the Wheeler-Lea amendment to the Federal Trade Commission Act, which is currently before Congress. In a previous definition of cosmetics, covered by the provisions of the bill, soaps would seem to have been included in this definition. In the revised draft, soaps have been definitely eliminated, so that if the bill is enacted into law there will be no change in the status of soaps for which no special cosmetic properties are claimed.

Limit Cleanser Claims

Roman Cleanser Co., 9101 Delmar St., Detroit, has entered into an agreement with the U. S. Federal Trade Commission under which it will cease representing that "Roman Cleanser" sterilizes combs, brushes and other articles; disinfects or deodorizes, unless this assertion is accompanied by directions that the article to be disinfected or deodorized must first be washed or thoroughly cleaned. It will cease representing that the product kills germs, unless this representation is limited to oxidizable germs, or qualified by the statement that "Roman Cleanser" will not kill all germs, including their spores.

Armour Wins Tax Refund

A refund of $172,962, representing taxes on the processing of coconut and other taxable oils paid by Armour & Co. in 1934 has been granted by the Federal Court at Chicago in a decision handed down July 16 by Federal Judge John P. Barnes. The Armour suit did not question the constitutionality of the processing tax, but stated that certain oils on which the tax was assessed had been partially processed prior to the effective date of the tax in May, 1934. Judge Barnes, who heard the case without a jury, ruled that Armour & Co. were not required to pay taxes on oil which they had begun to process before the tax went into effect. The suit is regarded as an important test case for the soap industry, as other manufacturers now stand to recover substantial sums on the basis of this decision.

New Naphthenic Soaps

S. Schwabacher & Co., New York, are offering new types of naphthenic soaps, several of which are practically odorless. The soaps, it is understood, are of European origin. They are being introduced on the American market primarily for use as emulsifying agents in insecticides, disinfectants, and allied products and also for certain detergent uses. The company also imports naphthenic acid sludges and other petroleum by-products. Certificates of analysis covering the naphthenic soaps are available to interested persons by addressing the company at its New York office, 25 Beaver Street.

Oppose Whale Oil Duty Change

Opposition to any change in the duty on imports of whale oil into United States was voiced by Hon. Schuyler Bland, chairman of the House Committee on Merchant Marine and Fisheries, in a recent statement. Speaking for a group of farm organizations and producers of tallow, grease and vegetable and animal fats, he attempted to forestall any commitment by the U. S. State Department to include a change in the rate of duty on whale oil in a proposed trade agreement with the Kingdom of Norway. He pointed out that such a reduction would be a severe blow to the menhaden fish oil industry and that it would also cause a sharp decline in the market prices of tallow, grease, corn oil, cotton oil and soybean oil.

Check Mulsified Shampoo Claims

R. L. Watkins Co., New York, has signed a U. S. Federal Trade Commission stipulation agreeing to cease representing that its "Mulsified Cocoanut Oil Shampoo" cannot possibly injure the most tender scalp; that scientists say it is the safe and best preparation to use for healthy, beautiful hair, and that it restores to the hair natural oils and youthful beauty.

F.T.C. Restrains Wolf Creek

Wolf Creek Soap Co., Dayton, Ohio, has been ordered by the U. S. Federal Trade Commission to discontinue certain unfair methods of competition in the sale of its products. Use of the word "Doctor" or any similar words to imply that any of the company's soaps are made under the supervision of a doctor is prohibited by the commission's order. It also bars use of the word "medicated", or words of similar import, to represent that any of the company's soaps have medicinal value, unless they actually contain medicinal ingredients in such quantity as to give substantial medicinal value. The concern is also directed to stop representing, through use of fictitious or exaggerated price markings, that its products have retail values in excess of the prices at which they are ordinarily retailed.

Wants Toilet Soap Agency

A concern in Port of Spain, Trinidad, is interested in securing an agency for sale of American toilet soaps. Interested concerns may communicate through the U. S. Bureau of Foreign and Domestic Commerce, Washington, D. C., mentioning inquiry No. 3579.

Offer New Soap Base

Antiseptol Co., Chicago soap and sanitary products manufacturer, announces that "Amberfoam," new liquid toilet soap, is now available in base form. This new soap, which is said to be much gentler in action while retaining excellent cleansing and lathering properties, was introduced a few months ago. It has been so well received by the trade, the manufacturer states, that it was decided to put it out in base form.

Junius E. Williams Dies

Junius E. Williams, division manager of Procter & Gamble Co., formerly of Portsmouth and Norfolk, Va., died in Atlanta, Ga., July 22. He was forty-six years old. Surviving are his widow; two sisters, Mrs. W. J. Britton, East Orange, N. J., and Miss Virginia Williams, Hackensack, N. J., and a brother, M. C. Williams, Portsmouth, Va.

Colgate Names New Directors

In line with its recently announced policy of naming additional directors to represent its stockholders among the general public, Colgate-Palmolive-Peet Co., Jersey City, has just announced the election of three new directors from without the company itself. These men are George W. Merck, president of Merck & Co., N. F. S. Russell, president of United States Pipe & Foundry Co., and W. Gibson Carey, Jr., president of Yale & Towne Co.

Schuelke With Murray Oil

Dr. Erich Schuelke, formerly sales manager for Woburn Degreasing Co., Harrison, N. J., has just joined Murray Oil Products Co., New York, and will take full charge of a new fatty acid department for this concern. This new department will supply all technical grades of vegetable and animal fatty acids. Dr. Schuelke will continue to operate his own company, Colloid Chemical Laboratories, New York, manufacturing and distributing esters and other derivatives of fatty acids and related products.


A colorful, well designed container often paves the way to the securing of new outlets in the distribution of an old product.
To the manufacturers who would explore this possibility, Continental offers a complete service which includes research, design and package development.
Baker's
STOCK SPRAY
AIDS IN KILLING AND REPELLING STABLE AND HORN FLIES
MANUFACTURED BY
S.F. BAKER & CO.
KEOKUK, IOWA
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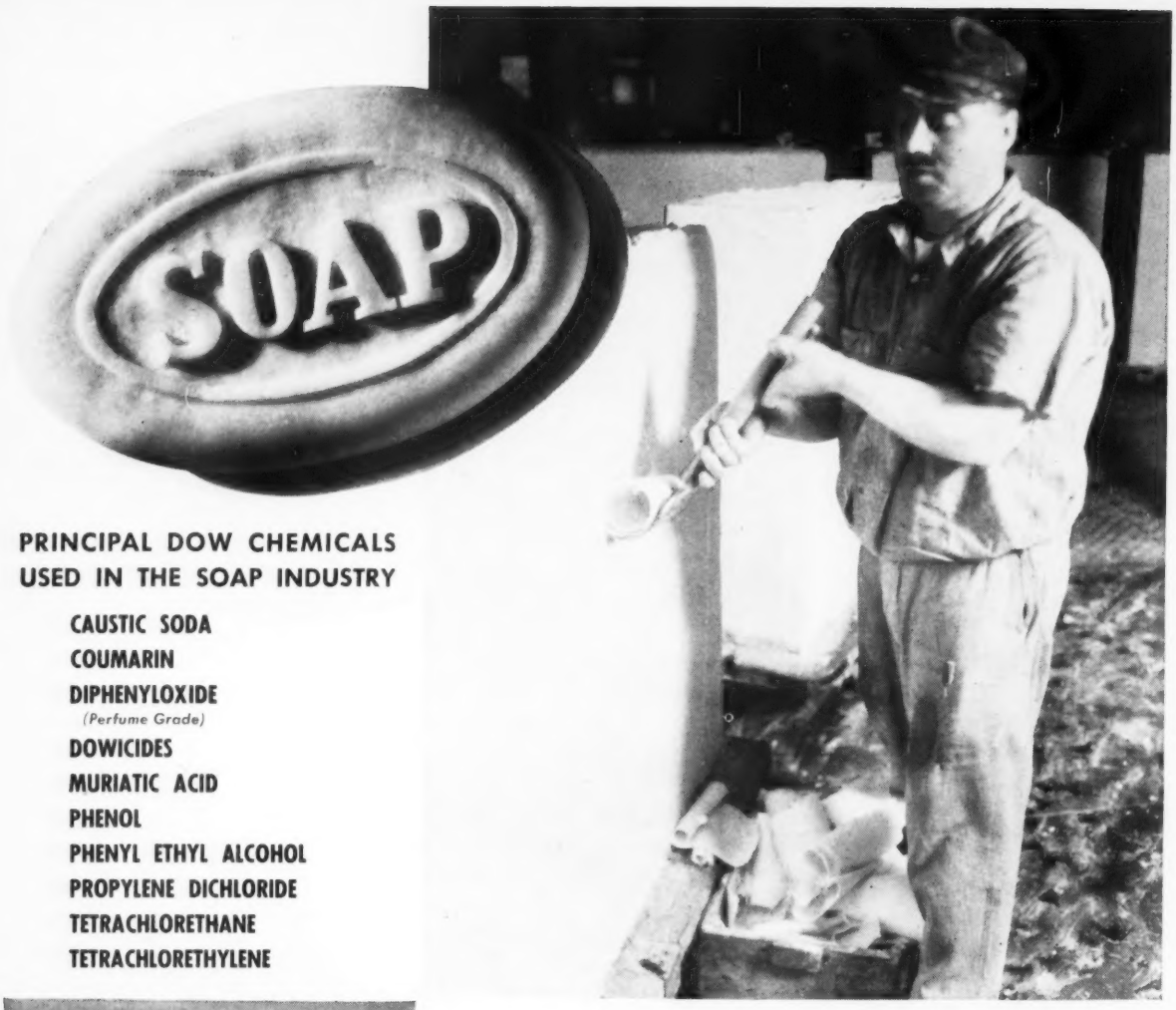
KILLS
FLIES-MOTHS
MOSQUITOES
ROACHES-FLEAS
BED BUGS
MOTH KILLING
crystals
SOLID
KILLS
PROTECTS
LARVEX
Gulfspray
INSECT KILLER
GULF
A STANCO PRODUCT
FLIT
Kills
Moths
Mosquitoes
Flies
Bed Bugs
Roaches
Ants
Flit spray will not stain
CROSS COUNTRY
LIQUID AUTO WAX
SEARS, ROEBUCK AND CO.
Sovereign
UPHOLSTERY and FABRIC CLEANER
MERCK & CO. Inc. RAHWAY, N.J.
CONTINENTAL CAN COMPANY



PRINCIPAL DOW CHEMICALS USED IN THE SOAP INDUSTRY

- CAUSTIC SODA
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- MURIATIC ACID
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There is scarcely an industry that does not use one or more Dow products somewhere in its manufacturing process and the soap industry is no exception.

Dow is a major producer of caustic soda, organic solvents, perfume bases, and other chemicals used in soap manufacture. Besides functioning as a reliable source of supply for established products, Dow research has made notable contributions to the advancement of the industry through the development of new products that have imparted new and improved qualities to soap.

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Offer "Steepo" Washing Powder

Ogston & Tennant, soap manufacturers of Renfrew and Aberdeen, Scotland, have just introduced a new washing compound in the United Kingdom under the name "Steepo". An introductory gift offer of a pair of silk stockings for 12 box coupons has been made, to extend through September 30, 1937.

Write on Vitamin F Ointments

Another recent contribution to the literature on Vitamin F is an article in the June, 1937, issue of the *Illinois Medical Journal* by Kathryn Glennon and M. L. Weinstein entitled "Vitamin F Ointments". The authors refer to the increasing prevalence of dry skins and allergic eczemas which they ascribe to the suppression of all fats in the diet and the replacement of natural fats containing vitamin F with hydrogenated substitutes. "Vitamin F should be restored to the diet", they urge, or must be applied externally through the medium of soaps, creams or ointments to remedy this deficiency. "Vitamin F", they say, "unlike the other vitamins, with the possible exception of vitamin E, operates well if applied externally, and equally well if administered internally."

Soap Makers Meet in Chicago

Over thirty soap manufacturers were represented at the June 29th meeting of the Association of American Soap and Glycerine Producers, held in the Blackstone Hotel, Chicago. Following a meeting of the board of directors in the morning, a general meeting was held in the afternoon. S. Bayard Colgate, active head of the organization, presided at the meeting and following a few opening remarks introduced Judge James A. Emery, general counsel for the National Association of Manufacturers, Washington, D. C. Judge Emery gave a very interesting talk regarding legislative matters and their possible effect on industry. He gave particular attention in his discussion to the Black-Connery wage and hour bill which is before Congress at the present time.

N. N. Dalton in charge of glycerine research for the association gave an interesting report on the glycerine situation and also gave some attention to possible price and supply developments in oils and fats for the soap kettle. Secretary R. C. Edlund gave a detailed report regarding the association's activities on legislative and tax matters and pointed out that since Maryland and Kentucky have repealed their excise taxes on soap there are no state discriminatory taxes on finished soaps for which no medical or curative claims are made. Mr. Edlund again emphasized the importance of pointing out to various legislative bodies that soap is not properly classifiable as a cosmetic. Thus far all efforts to prevent such classification have been successful with reference to state lawmaking bodies.

Mr. Edlund also read an interesting letter from John B. Gordon of the Bureau of Raw Materials for American Vegetable Oils and Fats Industries regarding the coconut oil excise tax situation. Mr. Gordon was unable to be in Chicago because of the work he is now doing on the committee investigating Philippine affairs. The meeting closed with a resolution from the floor for a vote of thanks to the officers and directors for their efforts in behalf of the industry.

Cosray Answers FTC

Cosray Products Co. of Los Angeles, a subsidiary of Los Angeles Soap Co., has just filed an answer to charges of the U. S. Federal Trade Commission that it has been advertising "Cosray Vitamin D Soap" in a false and misleading manner. The FTC complaint had attacked claims that the vitamin soap would be beneficial for treatment of acne and other skin irritations. In its answer Cosray denies the assertion of the commission that vitamin D has no effect on the skin or skin conditions. Denial is also made that Cosray advertising has any tendency to deceive or mislead the purchasing public. The next step in this case will be a trial before the commission, with witnesses being introduced on both sides to sift the scientific basis of the claims being made for vitamin D soaps.

New Kohnstamm Coast Unit

H. Kohnstamm & Co., manufacturers of laundry supplies and colors, at 837 Traction Avenue, Los Angeles, have recently taken over a building with 10,000 feet of floor space at 5735 District Boulevard, Los Angeles.

Lever Canadian Head Returns

P. P. Tylor, president of Lever Brothers, Toronto, Canada, returned from a business trip to England on July 24. He crossed the Atlantic to Montreal on the *Duchess of Bedford* from Liverpool.

Wants Dairy Detergents

A concern in Toronto, Canada, is interested in securing an agency for sale of dairy detergents of American manufacture. Full particulars may be obtained by addressing the U. S. Bureau of Foreign and Domestic Commerce, Washington, D. C., mentioning inquiry No. 3549.

New Office for Detroit Rex

Detroit Rex Products Co., Detroit, Mich., manufacturer of "Detrex" degreasing machines, "Perm-A-Clor" and "Triad" solvents, and "Triad" alkali cleaners and strippers, announces the opening of a new branch office located at 812 Huron Road, Cleveland. This office has been established as part of a general expansion program. The addition of this new branch will help to increase the scope of the personal service facilities offered by the company to its customers in this area.

Renew Palm Export Duty

French Cameroon has recently re-established the export duty of 5 per cent ad valorem on exports of palm oil and palm kernels from French Cameroon, which had been suspended since January 1, 1934.

PREPARED FROM THE FINEST MATERIALS AND ENTIRELY FREE FROM ADULTERANTS

PRICE'S *triple pressed* STEARIC ACID is used by leading manufacturers of the finest toilet preparations, shaving creams and toilet soaps.
Of guaranteed English manufacture, it is highly crystalline and white in color.
Melting point is 130°-133° Fahrenheit.
World famous for its unvarying uniformity in quality.
Packed in slabs of about one inch thickness in double burlap bags with a third protective inner bag forming a muslin liner.

Quotations for carloads or less upon application to exclusive American Representatives:

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742 So. Hill St.

Water Soluble Gums	Waxes	Cosmetic Raw Material	Fruit Flavors
Filter Paper	Stearic Acid	Oleo Resins	Food Colors
Aromatics	Essential Oils	Perfume Bases	Quince Seed
Rice Starch	Zinc Oxide French	Olive Oil	Irish Moss

MANUFACTURED BY PRICE'S OF LONDON, ENGLAND

Lever Oklahoma Sales Drive

A special sales drive has recently been conducted by Lever Bros. Co. in the Oklahoma district with a visiting sales crew consisting of a manager and a group of young ladies. The group travels in a sound truck and cooperates with local dealers in special sales drives on Lever products. Samples and coupons calling for free goods have also been used extensively.

Soap Industry Cuts Accidents

A recent report on accident rates in the chemical processing industries shows that soap makers reduced the frequency of accidents in their plants by 15 per cent in 1936, as compared with the 1935 average. This was accompanied, however, by an increase of 37 per cent in the severity of such accidents as occurred. The best record for the industry was presented by Lever Bros., Cambridge, Mass., who reported 1,738,502 man-hours between July 31, 1936, and January 20, 1937, without injuries. Geo. E. Marsh Co., Cambridge, Mass., has the best 1936 record among small units in the soap industry—working 84,000 man-hours without a disabling injury. The report for the soap group covers a total of 23,848,000 man-hours worked in 31 different plants. The total number of injuries reported was 317, of which 296 were temporary, with the other 21 accidents resulting in permanent partial disability. No deaths or permanent total disability were reported. The accident frequency rate for the soap industry was 13.29 and the severity rate .72, these figures comparing favorably with the general averages for all industries of 13.57 for frequency and 1.64 for severity. Copies of the complete report may be obtained by addressing the National Safety Council, 20 North Wacker Drive, Chicago.

Chicago Associations Golf

The Golf Auxiliary of the Chicago Drug and Chemical and Chicago Perfumery, Soap and Extract Associations held a mid-summer tournament at Olympia Fields Country Club, July 13th, with 65 members and guests on hand. Elmer F. Smith, acting as host, added a novel feature to the day's play by serving much-needed refreshments at his cottage near the tenth tee. Prizes were won by the following: Class A—1st, W. F. Zimmerman, 2nd H. A. Baumstark, 3rd Geo. H. Van Kirk, 4th E. H. Erickson and H. N. Cochran; Class B—1st M. V. Folds, 2nd T. F. Gilson and Harry Wallace, 3rd R. L. Holland and George Epstein; Class C—1st A. J. Edmond, 2nd J. A. A. Scott, 3rd J. H. Helfrich, 4th A. F. Frantz, 5th Wm. H. Schutte; Class D—1st A. J. Ratz, 2nd W. R. Nay, 3rd J. E. Wehmer, 4th E. L. Drach, 5th Herbert Rothschild. Guest prizes were won by R. R. Stern, B. T. Bush, E. A. Bush, T. B. Singleton and A. C. Siewers. The last tournament in Chicago this season will be held August 10 at Kildeer Country Club. The intercity meet with Detroit is scheduled for September 21st at the Birmingham Country Club in Detroit.

Soap Perfuming

A study of the trend in soap perfuming,—soap perfumes of yesterday and today,—some common errors and wrong impressions about soap perfuming,—a discussion which will be published in an early issue of SOAP by W. Reis.

Canadian Soap Output Up

Canadian soap manufacturers reported an increase in production of approximately 2 per cent in 1936 as compared with 1935. Comparative totals for the two years were $16,312,000 in 1936, as against $16,002,000 in 1935.

Italy Cancels Olive Duty

The Italian export duty of 150 lire per 100 kilos on crude sulfurated olive oil with not less than 40 per cent of free fatty acid has recently been cancelled by the Italian government.

Form Zim Mfg. Co.

Zim Manufacturing Co., 3437 Kingsway, Vancouver, B. C., Canada, has been incorporated with a capital of $75,000 to carry on business as dealers in soaps and other cleansing preparations.

Fire at Canadian Soap Plant

The soap plant of J. McMichell at 41 Garneau Street, Hull, Quebec, was damaged in a fire, July 13, resulting in losses amounting to about $1,200. Mr. McMichell stated that he would reopen as soon as possible.

New Hardesty Plant

W. C. Hardesty, Inc., of South Avalon Boulevard, Wilmington, Calif., fatty acid manufacturers, in the Los Angeles harbor district, is building a new plant at 5700 East Sixty-first street, Los Angeles, to cover an area of 51x121 feet, and to cost approximately $10,000. The main plant of the company is located at Dover, Ohio.

Watsons Return to N. Y.

Mr. and Mrs. Rupert C. Watson returned to New York last month after a six weeks' trip to England and the continent. Mr. Watson, who is vice-president and treasurer of Firmenich & Co., New York, visited the home office of his concern in Geneva, Switzerland, while abroad.

Solvay Appoints John Stauff

John Stauff has been appointed director of sales for Solvay Sales Corp., New York, a subsidiary of Allied Chemical & Dye Corp. Mr. Stauff, affiliated with Solvay since 1921, succeeds W. B. Blair, who has been named director of research and planning. L. B. Gordon, western sales manager, has been chosen assistant director of sales. The sales personnel otherwise remains unchanged, with A. B. Chadwick as executive vice-president; Harold Merritt, vice-president in charge of sales, and Charles Grossman, New York district sales manager.

Medicated Soap Perfumes

To correct a wrong impression that medicated soaps should not contain perfumes, the following communication has been received from Dr. Victor G. Fourman of Compagnie Parento, Inc., Croton-on-the-Hudson, N. Y.:

"In the abstract of the article on 'Medicated Soaps' by J. Davidsohn and A. Davidsohn, published on page 61 of the July issue of your valued journal, the following statement is made: 'Fillers and perfumes (in medicated soaps) are excluded, owing to possible irritant action on the skin.'

"As manufacturers of perfume oils, we are surprised to see this statement in an article which in all other respects shows considerable thought and accuracy. The above statement gives the impression that perfume oils are always excluded in Medicated Soaps. This is not true as there are a number of well-known Medicated Soaps on the market which are perfumed. There has been considerable progress made in the manufacture of perfumes since the time when soap makers avoided the use of essential oils and aromatics in Medicated Soaps because of possible irritation.

"Today Medicated Soaps can be readily perfumed with ingredients definitely known to be non-irritating to the skin provided one selects the proper ingredients. We are here, of course, not concerned with the question of allergy since even pure tallow and lard or Cocoanut Oil and Olive Oil may be allergic.

"If Medicated Soaps are not perfumed for the reason given by Messrs. Davidsohn then neither should soap shampoos or cold creams or any other product be perfumed. Yet we know that such preparations as nasal jellies, which are in contact with very delicate membranes, are being perfumed with satisfactory results by reputable pharmaceutical manufacturers.

"Our thought in addressing this letter to you is to correct a wrong impression which has no actual basis of fact."

New German Whaling Ship

The first modern ship for a German whaling fleet to be built in Germany has just been launched in Hamburg. It has been built for the Walter Rau Oil Works. The ship is of 22,000 tons, has a length of 525 feet and a breadth of 67 feet, and is complete with most modern devices for utilizing the carcases of whales in addition to the actual production of oil.

Kammer Joins van Ameringen

August F. Kammer, for many years in the glass container field with the Carr-Lowry Glass Co. and widely

known in the toilet goods and cosmetic industries, became associated with van Ameringen-Haebler, Inc., New York, July 1 as vice-president. He will spend most of his time in sales work in and about the New York territory. Mr. Kammer has been the creator of numerous modern packages used in the toilet goods industry during recent years. He is an ardent golfer and was for several years New Jersey State amateur champion.

New P. & G Plant Near London

The British subsidiary of Procter and Gamble Co., Thomas Hedley & Co., of Newcastle, is negotiating for a large factory site at Purfleet, Essex, near London. While the purchase has not yet been finally completed, it is understood that construction of a new Hedley plant will be started very shortly. G. H. Walton, secretary of Thomas Hedley & Co., states that for a considerable time past the company has been considering the advisability of making additional manufacturing arrangements in the South of England.

Thomas Hedley & Co. is a close-held company, of which R. R. Deupree, P & G's president, is chairman, and has an authorized and issued capital of £500,000. A majority of the shares is owned by the Procter & Gamble Co. A big increase in Hedley's soap production has occurred in recent years. The Newcastle works have been enlarged and a new factory built at Manchester. Specialties include Fairy Soap, Dyso, and Oxydol soap powder. A high-power national advertising campaign is being conducted for Oxydol.

Detroit Rex Prods. Building

Detroit Rex Products Co., 13005 Hillview Ave., Detroit, manufacturer of cleaners and solvent degreasing equipment, has announced plans for the construction of a new modern factory building on a plot of land adjacent to its present main office building. This is the second time within a year that this concern has been forced to seek larger manufacturing facilities. The new building will be 100 ft wide by 300 ft. long, of a single-story monitor-type design, with a two-story front. It will contain spacious and well-lighted engineering offices, drafting rooms, and a new and completely equipped research laboratory. The building will be of a brick, concrete, and steel sash construction. The increased production facilities made possible by this new factory will enable the company to speed up delivery on all designs and sizes of degreasing machines, and assist the company to maintain its position in the industrial cleaning field. A complete engineering service on metal cleaning is furnished to all customers and prospects. The officers of the company are: R. A. Emmett, president; W. W. Davidson, vice-president in charge of sales; C. F. Dinley, vice-president in charge of research and engineering; and G. E. Powers, treasurer.

George Silver Changes Name

Effective July 1 the name of George Silver Import Co., New York, was changed to Roure-Dupont, Inc. The firm will continue to operate at the same address, under the same officers, without other change, offering the perfuming materials of Roure-Bertrand Fils and Justin Dupont in the American market.

Launching a NEW Soap Product?

Use Modern P. Q. SILICATES

TODAY new soap products are designed for a new world. This is a world of new standards for soaps — quicker cleaning, more exacting results and closer buying. And these standards you can easily meet with P. Q. Silicates.

The P.Q. line has 33 different silicates. Have you looked them over to determine how you can improve quality or lower costs? Complete information on the liquid, solid and powdered P.Q. Silicates is found in Bulletins 171 and 172. Request copies without obligation.

Is your research department working on a new product? Let us discuss with you the use of a different ratio silicate, or one of the dozen powdered grades available from P.Q. Silicate Headquarters.

P.Q. SILICATES OF SODA

PHILADELPHIA QUARTZ CO.

PHILADELPHIA

General Offices and Laboratory: 125 S. Third St., Phila., Pa.
Chicago Sales Office: Engineering Bldg Stocks in 60 cities.
Sold in Canada by National Silicates Ltd., Toronto, Ont.

Works: Anderson, Ind., Baltimore, Md., Chester, Pa., Buffalo, N. Y., Kansas City, Kans., Rahway, N. J., St. Louis, Mo., Utica, Ill.

ESTABLISHED 1831

Send Bulletin No. 1, P.Q. Silicates of Soda in Soapmaking, also No. 171 and 172 on the Properties of Silicate of Soda.

*Name*_____

*Address*_____

*City*_____ *State*_____

REG. U.S. PAT. OFF.

Contracts Awarded

Gets Laundry Soda Award

Tex-ite Products Corp., Brooklyn, has just been awarded a contract by the U. S. Army Quartermaster at Brooklyn calling for 250,000 lbs. laundry soda at 1.55c per lb.

Soda Ash Award to Welch

A contract for 80,000 lbs. of soda ash has just been awarded to John Welch & Co., Leavenworth, by the purchasing officer at Fort Leavenworth, Kansas. The price at which the award was made was 1.1c per lb. at the shipping point.

Gets Carbon Tet Award

An award covering a contract for 200 gallons of carbon tetrachloride has just been made to Harshaw Chemical Co., Philadelphia, by the Frankford Arsenal, Pa. The quotation on this quantity was 5.45c per pound.

Want Grit Soap Bids

Bids are wanted August 6 by the Quartermaster Supply Officer, Army Base, Brooklyn, on 60,000 cakes grit soap.

Seek Laundry Soap Bids

The Quartermaster Supply Officer, Army Base, Brooklyn, will open bids, August 6, on 698,700 lbs. laundry soap.

Want Scouring Soap Bids

The Quartermaster Supply Officer, Army Base, Brooklyn, has asked for bids, opening August 9, on 3,938 lbs. scouring soap.

Seek Floating Soap Bids

Bids on 62,700 cakes white floating soap are sought by the Quartermaster Supply Officer, Army Base, Brooklyn, August 9.

Charge Whale Tax Avoidance

A charge that Norwegian whale oil producers have avoided paying taxes on 40,000,000 pounds of whale oil shipped into the United States this year was made by A. M. Loomis, representative of dairy interests, in a recent affidavit made to the Joint Committee on Tax Avoidance. The Loomis claim is based on various cargoes of whale oil received in New York and Norfolk early this year landed by Norwegian tankers, and claimed to have been produced by an American whaling ship, named the "Frango", operating in the South Indian Ocean. Upon the claim that this oil was the "product of American fisheries," because the "Frango" is an American ship, the excise tax of three cents per pound was not paid.

"The oil brought to the United States from the ship 'Frango', as nearly as we can learn," says Mr. Loomis, "Is made from whales every one of which was fished for, caught and killed by Norwegian crews of Norwegian killer ships. We believe that the fishing for whales by Norwegian killer ships, even if the oil is rendered on an American ship, makes this a foreign and not an American fishery. We believe that the facts will disclose that the purchase and incorporation of this ship has been done by Norwegian capitalists, that they have taken this way to avoid the tax which is placed by law on whale oil of foreign origin."

Mr. Loomis has asked the committee to call the owners of the "Frango" to testify whether or not that ship is actually owned by Americans or Norwegians, and as to the ownership, registry and nationality of the crews of the killer ships, which actually fish for, and catch and kill the whales. He favors a new amendment to the excise tax bill, specifying that whale oil shall be free from duty only if all the ships engaged in the fishery are of American registry.

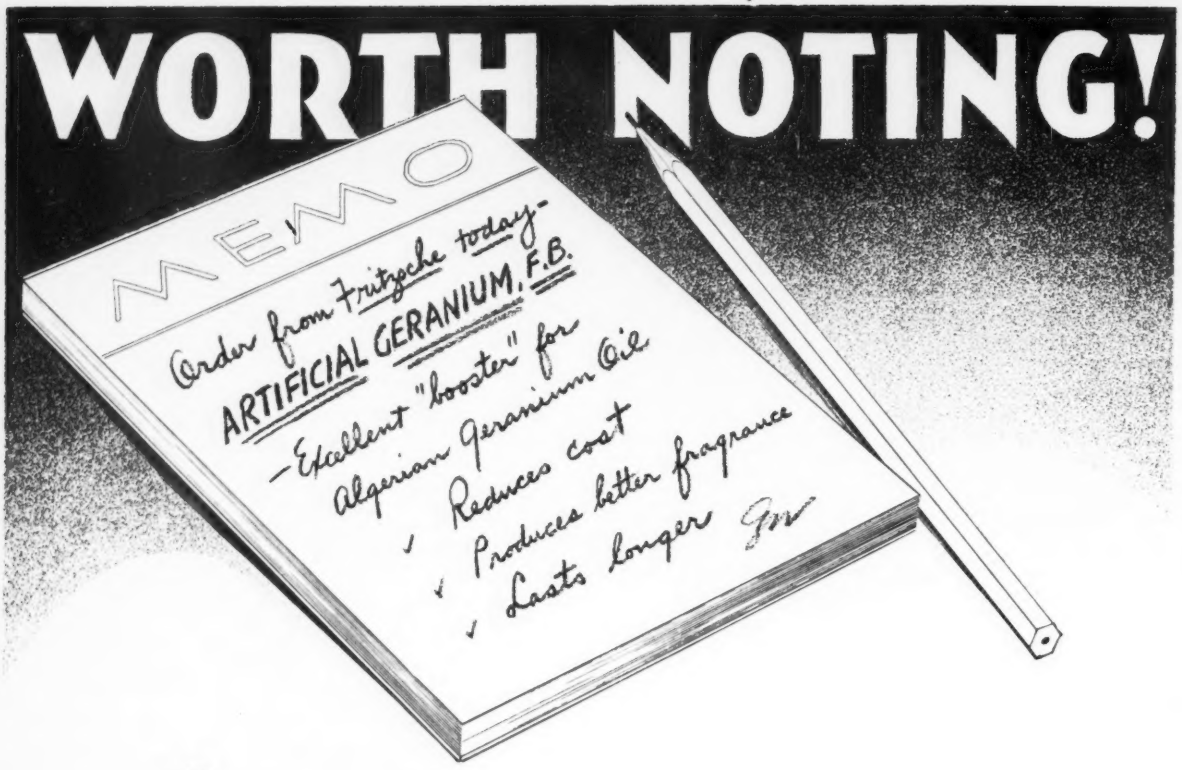
Soap Use in Oil Wells

How ordinary soap may prevent the "drowning" of oil wells and give greater yields of water-free crude oil is described in a patent granted to George E. Cannon, of Houston, Texas, and assigned to the Standard Oil Development Co. Mr. Cannon claims that by pumping a plain soap solution down into the bore holes of oil wells, he can plug up the pores in the underground sands through which oozes the water that is responsible for drowning the well and contaminating the oil. The plugging action occurs when the soap reacts with the magnesium and calcium salts in the water to form a soap curd which fills up the pores in the sand and which does not let the water through. *Science Supplement*, July 2, 1937, p. 13. (Patent No. 2,079,431 was issued to George E. Cannon.)

Revise Certified Bid Lists

The National Bureau of Standards of the U. S. Department of Commerce is currently revising its list of soap manufacturers who are willing to certify that their products conform to tests and requirements of federal specifications. The bureau is particularly anxious that every manufacturer desirous of being listed have the opportunity to make the necessary arrangements. Lists of firms in the soap and allied fields willing to certify that their products conform to federal specifications are prepared by the bureau for distribution to tax-supported agencies such as federal, state and local purchasing bureaus. An outline of the certification plan may be obtained by addressing G. W. Wray, division of codes and specifications, National Bureau of Standards, Washington, D. C.

WORTH NOTING!



JOT this down as a reminder—ARTIFICIAL GERANIUM, F.B.—and investigate it at your earliest opportunity. You'll be as enthusiastic about this new soap perfume as we are when you discover how lasting and lifelike is its fragrance. And when you compare its cost you'll be even more enthused!

ARTIFICIAL GERANIUM, F.B. may be used alone or as a "booster" in combination with Algerian Geranium Oil. In the latter case it actually improves the fragrance—makes it more flowery and much more enduring. In addition, its substitution effects a substantial saving in raw material cost—a worthwhile consideration in these days of mounting prices.

Detailed suggestions for its use will be furnished all those interested in its possibilities. A line, briefly describing your product, will bring further interesting particulars.

"Fragrance Creates Sales Appeal"

FRITZSCHE Brothers, inc.

816 WEST 8TH STREET LOS ANGELES, CAL.
Proprietors of PARFUMERIES de SEILLANS Seillans, France
FRITZSCHE BROTHERS, of Canada, Ltd., 77 79 Jarvis St., Toronto, Canada

PORT AUTHORITY COMMERCE BLDG.
76 NINTH AVENUE, NEW YORK, N. Y.
118 WEST OHIO ST. CHICAGO, ILL.

Offer "Sir" Cosmetics

R. J. Reuter & Co., Ltd., Slough, England, agents in the United Kingdom for the "4711" line, have just started a sales campaign on a new line—"Sir" shaving cream, shaving soap, lotion and talc.

Check "Wildroot" Claims

Wildroot Co., Buffalo, N. Y., maker of "Wildroot Instant Shampoo", has just signed an agreement with the U. S. Federal Trade Commission, agreeing to cease advertising that the product helps to correct abnormal oiliness or dryness of the scalp, unless this representation is limited to such benefits as may result from its cleansing and antiseptic action on scalp and hair. An agreement has also been signed for a similar limitation of claims for "Wildroot Hair Tonic".

Cotton Oil Stocks

Stocks of crude cottonseed oil on hand in United States as of June 30, 1937, totaled 21,372,990 lbs., as compared with 37,250,608 lbs. on the same date a year ago.

New C-P-P Shampoo

Colgate - Palmolive - Peet Co., Jersey City, N. J., will shortly introduce a new shampoo under the name "Halo."

Margaret J. Hausman

It is with deep regret that the death on June 30 of Margaret J. Hausman of the editorial staff of SOAP is announced. Miss Hausman contributed numerous articles to SOAP over the past few years, chiefly on oils, fats, waxes, and other technical subjects and her writings attracted wide attention. She held the degrees of B. S. and M. A. from Hunter College, New York. Just prior to her death, she completed the work on an article, "Superfatting and Emulsifying Agents in Soaps," which will be published in an early issue of SOAP.—The Editors.

New Trade Marks

The following trade-marks were published in the July issues of the *Official Gazette* of the United States Patent Office in compliance with Section 6 of the Act of September 20, 1905, as amended March 2, 1907. Notice of opposition must be filed within thirty days of publication. As provided by Section 14, fee of ten dollars must accompany each notice of opposition.

Trade Marks Filed

MILK TONE—This in solid letters describing toilet soap. Filed by Franklin Simon & Co., New York, Apr. 3, 1937. Claims use since March 25, 1937.

RIPLEY'S—This together with picture of girls' heads describing cleanser. Filed by Ripley Products Co., Los Angeles, April 8, 1937. Claims use since Dec. 28, 1936.

SUPERFOAM—This in solid letters describing cleaner. Filed by McCall Merchandising Co., Cincinnati, May 4, 1937. Claims use since Sept. 24, 1934.

KOLADOL—This in solid letters describing soap and shaving cream. Filed by Los Angeles Soap Co., Los Angeles, May 3, 1937. Claims use since Mar. 4, 1937.

LIQUID SNOW—This in solid letters describing insecticide. Filed by Klinzmoth Chemical Corp., New York, April 15, 1937. Claims use since 1934.

BUS BOY—This is solid letters describing cleanser. Filed by Metal Textile Corp., West Orange, N. J., Nov. 7, 1936. Claims use since Oct. 21, 1936.

COUNTRY CLUB—This in solid letters describing soaps and shaving cream. Filed by Houbigant, Inc., New York, Sept. 4, 1936. Claims use since Aug. 29, 1936.

KOOL KAKE — This together with picture of girl on ice cake describing soap. Filed by Kool Kake Soap Products, Miami, Fla., March 5, 1937. Claims use since January, 1936.

SKREE-O—This in outline letters describing insecticide. Filed by Willis Products, Brooklyn, N. Y., Dec. 4, 1936. Claims use since Oct. 1, 1936.

SHOOTUM—This in solid letters describing insecticide and fungicide. Filed by Huffman Chemical Corp., Bedford Hills, N. Y., March 1, 1937. Claims use since Feb. 20, 1937.

PESTOWAY — This in outline letters on dark background describing insecticide. Filed by Pest-O-Way Exterminating Co., Baltimore, March 6, 1937. Claims use since Sept. 15, 1936.

TOPS—This in solid letters describing insecticides and cleaner. Filed by Derris, Inc., New York, April 2, 1937. Claims use since March 10, 1937.

SPRY—This in solid letters describing insecticides and cleaner. Filed by Derris, Inc., New York, April 2, 1937. Claims use since Feb. 5, 1937.

STEVENIZE—This in solid letters describing polish. Filed by Stevens Polishing Co., Coraopolis and Imperial, Pa., May 23, 1936. Claims use since March 2, 1936.

MORTONE—This together with picture of man shaving describing shaving cream. Filed by Barrow Brand Products, New York, Feb. 27, 1937. Claims use since Aug. 3, 1935.

MEDIALAN—This in solid letters describing cleanser. Filed by General Dyestuff Corp., New York, May 8, 1937. Claims use since Nov. 18, 1936.

WHITE CROWN—This on stencil describing soap chips. Filed by Procter & Gamble Co., Cincinnati, Jan. 29, 1936. Claims use since February, 1909.

KALA-KLEAN — This in solid letters describing woodwork cleaner. Filed by Kala-Klean Chemical Co., Kalamazoo, Mich, Nov. 2, 1936. Claims use since Oct. 1, 1936.

DICO—This in solid letters describing cleanser. Filed by Diversey Corp., Chicago, May 13, 1937. Claims use since Oct. 15, 1936.

NUFOS—This in solid letters describing alkali cleanser. Filed by Mathieson Alkali Works, New York, May 13, 1937. Claims use since Mar. 25, 1937.

GLOEZE—This in outline letters with dark background describing cleansers. Filed by J. S. Fickel, Denver, Colo., May 14, 1937. Claims use since April 1, 1937.

THE BARRILET—This in solid letters describing shaving soap. Filed by Pinaud, Inc., New York, May 14, 1937. Claims use since April 28, 1937.

FRISK—This in solid letters describing detergent. Filed by Scott Chemical Co., Lynn, Mass., May 14, 1937. Claims use since May 12, 1937.

PAN-SAYF—This in solid letters describing detergent. Filed by Griffith Laboratories, Chicago, May 17, 1936. Claims use since February, 1935.

WEARITE—This in solid script describing shoe polish. Filed by W. T Grant Co., New York, May 28, 1937. Claims use since June 17, 1933.

CALO—This in solid letters describing soap base stucco and wall cleaner. Filed by California Stucco Co., Ltd., Los Angeles, Calif., May 29, 1937. Claims use since April 3, 1937.

BIG SIX ANTISEPTIC—This in solid letters describing antiseptic. Filed by A. Henriques, Biloxi, Miss., March 18, 1937. Claims use since March 1, 1931.

SHIRLAN—This in solid letters describing fungicide. Filed by E. I. Du Pont de Nemours & Co., Wilmington, Del., March 23, 1937. Claims use since March 25, 1935.

SPAB—This in solid letters describing cleaner. Filed by New Products Corp., Indianapolis, May 13, 1937. Claims use since Feb. 23, 1937.

THIS—This in solid letters describing cleanser. Filed by New Products Corp., Indianapolis, May 13, 1937. Claims use since Feb. 17, 1937.

SPRALASTIC—This in solid letters describing insecticide and fungi-

cide. Filed by Sherwin-Williams Co., Cleveland, O., May 20, 1937. Claims use since March 31, 1937.

LED-KO—This in solid letters describing insecticides. Filed by Dye-Col Products, New York, May 21, 1937. Claims use since May 11, 1937.

SUNCRESS—This in solid script describing insecticides. Filed by Dye-Col Products, New York, May 21, 1937. Claims use since May 11, 1937.

Trade Marks Granted

347,472. Insecticides and Fungicides. Chipman Chemical Co., Bound Brook, N. J. Filed Jan. 15, 1936. Serial No. 373,675. Published Aug. 4, 1936. Class 6.

347,519. Cleaning Preparation. Non-Glare Chemical Co., Evanston, Ill. Filed Dec. 11, 1936. Serial No. 386,655. Published April 20, 1937. Class 4.

347,520. Hand Cleanser. Less Effort Products Co., Chicago. Filed Dec. 11, 1936. Serial No. 386,663. Published April 20, 1937. Class 4.

347,548. Insect Poisons. An-Fo Manufacturing Co., Oakland, Calif. Filed Jan. 12, 1937. Serial No. 387,711. Published April 20, 1937. Class 6.

347,561. Detergents. Cowles Detergent Co., Cleveland. Filed Jan. 25, 1937. Serial No. 388,121. Published April 20, 1937. Class 4.

347,603. Cleaning Compound. Johns-Manville Corp., New York. Filed Feb. 6, 1937. Serial No. 388,616. Published April 20, 1937. Class 4.

347,640. Saponaceous Compounds. Shulton, Inc., New York. Filed Feb. 17, 1937. Serial No. 389,041. Published April 20, 1937. Class 4.

347,644. Soap and Shaving Cream. Basel Co., Cleveland. Filed Feb. 19, 1937. Serial No. 389,109. Published April 20, 1937. Class 4.

347,656. Detergent. Hercules Powder Co., Wilmington, Del. Filed Feb. 24, 1937. Serial No. 389,318. Published April 20, 1937. Class 4.

347,663. Cleaning Compound. Parfums Duvee, Inc., New York. Filed February 25, 1937. Serial No. 389,372. Published April 20, 1937. Class 4.

347,722. Insecticides. Irving Billig, New York. Filed Feb. 12, 1937. Serial No. 388,827. Published April 20, 1937. Class 6.

347,756. Detergent. V. C. Products Co., Philadelphia, Pa. Filed Feb. 27, 1937. Serial No. 389,489. Published April 27, 1937. Class 4.

347,769. Shaving Cream. Louangel Corp., New York. Filed March 5, 1937. Serial No. 389,688. Published April 27, 1937. Class 4.

347,808. Fly Repellent. Consolidated Chemical Ind., San Francisco. Filed Dec. 8, 1936. Serial No. 386,482. Published April 27, 1937. Class 6.

347,820. Metal Soap Dishes, Soap Savers, and Wall Soap Holders. Washburn Co., Worcester, Mass. Filed Jan. 13, 1937. Serial No. 387,760. Published April 20, 1937. Class 13.

347,837. Antiseptic. Aromaseptic Co., Los Angeles. Filed March 8, 1937. Serial No. 389,766. Published April 27, 1937. Class 6.

347,840. Polish and Cleaner. Sno-Flake Products Co., Detroit. Filed March 8, 1937. Serial No. 389,802. Published April 27, 1937. Class 4.

347,918. Insecticides. Paul de Gouras, Atlanta, Ga. Filed Dec. 7, 1936. Serial No. 386,467. Published April 27, 1937. Class 6.

347,948. Detergent. Opalco Laboratory, McKeesport, Pa. Filed Jan. 28, 1937. Serial No. 388,265. Published May 4, 1937. Class 4.

347,959. Soap. S. & S. Soap Corp., New York. Filed Feb. 3, 1937. Serial No. 388,517. Published May 4, 1937. Class 4.

347,979. Soap. Sterling Products Co., Easton, Pa. Filed Feb. 11, 1937. Serial No. 388,806. Published May 4, 1937. Class 4.

347,992. Cleaning Preparation. Dixie Disinfecting Co., Dallas, Tex. Filed Feb. 19, 1937. Serial No. 389,122. Published May 4, 1937. Class 4.

348,015. Insecticide. Vail & Bunting, Hamilton, Ohio. Filed Feb. 25, 1937. Serial No. 389,389. Published April 27, 1937. Class 6.

348,033. Insecticide and Deodorant. American Oil Co., Baltimore. Filed March 2, 1937. Serial No. 389,540. Published April 27, 1937. Class 6.

348,061. Cleaners and Polishes. Natty Products Co., Schlater, Miss. Filed March 11, 1937. Serial No. 389,933. Published May 4, 1937. Class 4.

348,171. Detergent. Walter Tribble, Oakland, Calif. Filed Dec. 19, 1936. Serial No. 386,971. Published May 11, 1937. Class 4.

348,239. Shampoo. Crystex Laboratories, Inc., Chariton, Iowa. Filed March 2, 1937. Serial No. 389,545. Published May 4, 1937. Class 6.

348,247. Insecticides. Black Flag Co., Baltimore. Filed March 4, 1937. Serial No. 389,631. Published May 11, 1937. Class 6.

348,261. Insecticides and Fungicides. Micronizer Processing Co., Camden, N. J. Filed March 11, 1937. Serial No. 389,930. Published May 4, 1937. Class 6.

348,266. Toilet Soaps. Bostonia Products Co., Boston. Filed March 12, 1937. Serial No. 389,975. Published May 11, 1937. Class 4.

348,289. Deodorants, Insecticides and Moth Repellents. Randolph Laboratories, Chicago. Filed March 18, 1937. Serial No. 390,193. Published May 4, 1937. Class 6.

348,297. Cleaning Compound. Champion Chemical Works, New York. Filed March 19, 1937. Serial No. 390,263. Published May 11, 1937. Class 4.

348,298. Soap. Hei-Ho Products Corp., New York. Filed March 19, 1937. Serial No. 390,273. Published May 11, 1937. Class 4.

(*Turn to Page* 117)

Laundry Soaps

The effects of organized laundry research on the composition and market for household laundry soaps in England and what it has done to alter the trends in soap consumption. An article in the next issue of SOAP by Joseph M. Vallance of Warrington, England.

Raw Material Markets

(As of July 26, 1937)

NEW YORK—An important feature of the market for soap making raw materials this period was the apparent reversal to the recent downward trend in fat and oil prices which struck the market about the middle of this period. After declining for a period of several months, soapmaking fats and oils apparently reached levels where buyers were interested in taking stocks, and with a resumption of buying on a moderate scale, prices reversed their direction. Whether the reversal is merely temporary, or perhaps marks the resumption of an upward swing in fat and oil prices, is not yet apparent.

A series of minor advances have been noted recently in chemical raw material prices. The latest of these is a fractional advance in the price of potash lump alum. Labor costs are rising in the chemical group and further price advances will no doubt be encountered over the coming year. In the perfuming materials group the important feature this month was devaluation of the French franc. This had a tendency to weaken prices for some essential oils of French origin, but in many cases producers advanced shipment prices enough to keep the American market prices practically stable.

OILS AND FATS

Coconut Oil

Coconut oil prices continued to move lower this period and at one point New York tanks of Manila oil were quoted as low as 5¼c per lb. There was a recovery late in the period, however, and both copra and coconut oil gained some of the ground lost earlier. At the close, New York tanks were offered at 5½c, which was ⅜c per lb. under the level of the previous month.

Greases

Greases eased off ⅛c per lb. early in the period, but just before the close recovered ¼c per lb. to finish the period priced above their level of a month ago.

Olive Oil

Reports this period indicate that resumption of shipments of olive oil from Spain may soon be expected. The current Spanish crop is reported very good and reports from Spain indicate that the ban on exports has been lifted. Not until normal shipments start coming thru regularly from Spain can the consuming industries expect any return to previous price levels.

Tallow

The tallow market is very firm at present levels, with only limited offerings available at current prices. It is probably that materially higher bids would have to be made to draw out any substantial stocks. The market is currently steady at 8½c per lb. for city extra.

ESSENTIAL OILS

An important feature of the market for perfuming materials this period was the devaluation of the French franc which would normally tend to reduce American quotations on French oils. After being cut loose from gold the franc found its level at a value of about 3.85c, this representing a devaluation of approximately 15 per cent in terms of the American dollar. The result in the American market was a moderate drop in the price of some French oils, although in a number of cases shippers advanced their quotations sufficiently so that there was but little change in quotations in the American market. Another development of the period was the renewed outbreak of hostilities in China, leading to fears that shipments of anise and cassia oils might again be interfered with.

Citronella Oil

Ceylon oil worked slightly lower this period in a quiet market. The range is now 40 to 42c for oil in drums, with Java oil at 41 to 42c.

Geranium Oil

Lower quotations on geranium oil this period seemed traceable to the recent devaluation of the franc. Algerian, Bourbon and Turkish varieties were all quoted substantially lower in the local market in line with more favorable replacement prices from abroad.

Lemongrass Oil

In contrast to some of the other domestic oils, lemongrass moved lower in the price brackets this period. It is currently quoted at 40 to 50c per lb., a drop of ten cents from previous levels. The drop is attributed to lower replacement costs.

Rosemary Oil

Slightly lower quotations are noted on Spanish oil, indicating some improvement in the supply situation. The current market range is from 50 to 65c for oil in drums.

MISCELLANEOUS

Potash Alum

The price of potash lump alum was advanced ¼c per lb. this period by producers, bringing the level of prices up to 3½ to 3¾c per lb.

Creosote Oil

Creosote oil moved an additional ½c per gal. higher this period. The market is now quoted at 13½c to 14c per gal.

Pyrethrum Extract

Although pyrethrum powder itself is unchanged in price this period, extract quotations have been advanced in some quarters due to the necessity of using more powder at this late date in the season to secure an extract of satisfactory strength. With substantially higher amounts of flowers necessary to make extracts of given strength, prices have had to move higher.

Raw Material Prices

(As of July 26, 1937)

Minimum Prices are for car lots and large quantities. Price range represents variation in quotations from different suppliers and for varying quantities.

Chemicals

Acetone, C. P., drums	lb.	$ .06	$ .06½
Acid. Boric, bbls., 99½%	ton	95.00	100.00
Cresylic, drums	gal.	.89	.93
Low boiling grade	gal.	.92	.96
Oxalic, bbls.	lb.	.11½	.12¼
Adeps Lanae, hydrous, bbls.	lb.	.16	.18
Anhydrous, bbls.	lb.	.17	.19
Alcohol, Ethyl, U. S. P., bbls.	gal.	4.14	4.19
Complete Denat., SD 1, drums, ex.	gal.	.32	.37
Alum. Potash lump	lb.	.03½	.03¾
Ammonia Water, 26°, tanks, dlvd.	lb.	.05	.05¼
Ammonium Carbonate, tech., bbls.	lb.	.08	.12½
Bentonite 1	ton	—	16.00
Bentonite 2	ton	—	11.00
Bleaching Powder, drums	100 lb.	2.25	2.60
Borax, pd., cryst., bbls., kegs	ton	47.00	67.00
Carbon Tetrachloride, car lots	lb.	—	.05¼
Caustic, see Soda Caustic, Potash Caustic			
L. C. L.	lb.	.07	.08
China Clay, filler	ton	10.00	25.00
Cresol, U. S. P., drums	lb.	.12	.12½
Creosote Oil	gal.	.13½	.14
Feldspar (200 to 325 mesh)	ton	14.00	15.00
Formaldehyde, bbls.	lb.	.05¾	.06¼
Fullers Earth	ton	15.00	24.00
Glycerine, C. P., drums	lb.	.21½	.22
Dynamite, drums	lb.	.21½	.22
Saponification, drums	lb.	.15½	.16
Soap, lye, drums	lb.	.14	.14½
Hexalin, drums	lb.	—	.30
Kieselguhr, bags	ton	—	35.00
Lanolin, see Adeps Lanae.			
Lime, live, bbls.	per bbl.	1.70	2.20
Mercury Bichloride, kegs	lb.	.71	.76
Naphthalene, ref. flakes, bbls.	lb.	.07¼	.07½
Nitrobenzene (Myrbane) drums	lb.	.09	.11
Paradichlorbenzene, bbls., kegs	lb.	.16	.25
Petrolatum, bbls. (as to color)	lb.	.02	.07¼
Phenol, (Carbolic Acid), drums	lb.	.13¼	.14¼
Pine Oil, bbls.	gal.	.70	.85
Potash, Caustic, drums	lb.	.06¼	.06½
Flake	lb.	.07	.07¼
Potassium Carbonate, solid	lb.	.07¼	.09½
Liquid	lb.	.03½	.03¾
Pumice Stone, powder	100 lb.	3.00	4.00
Rosins (600 lb. bbls. gross for net)—			
Grade B to H, basis 280 lbs.	bbl.	9.10	9.10
Grade K to N	bbl.	9.10	9.12
Grade WG and X	bbl.	9.12	9.95
Wood FF Spot	bbl.	8.56	9.65
Rotten Stone, pwd. bbls.	lb.	.02½	.04½
Silica	ton	20.00	27.00
Soap, Mottled	lb.	.04⅛	.04⅜
Olive Castile, bars	lb.	.26	.35
Olive Castile, powder	lb.	.28	.38
Powdered White, Neutral	lb.	.19½	.21½
Olive Oil Foot, bars, 68-70%	lb.	.09	.09½
Green, U. S. P.	lb.	.08	.09½
Tallow Chips, 88%	lb.	.09	.09½
Soda Ash, cont., wks., bags, bbls.	100 lb.	1.23	1.50
Car lots, in bulk	100 lb.	—	1.05
Soda Caustic, cont., wks., solid	100 lb.	—	2.60
Flake	100 lb.	—	3.00
Liquid, tanks	100 lb.	—	2.25
Soda Sal., bbls.	100 lb.	$1.10	$1.30
Sodium Chloride (Salt)	ton	11.40	14.00
Sodium Fluoride, bbls.	lb.	.07¼	.08¾
Sodium Hydrosulphite, bbls.	lb.	.19	.20
Sodium Silicate, 40 deg., drum	100 lb.	.80	1.20
Drums, 52 deg. wks.	100 lb.	1.35	1.75
Tar Acid Oils, 15-25%	gal.	.22½	.30½
Triethanolamine	lb.	.20	.25
Trisodium Phosphate, bags, bbls.	lb.	.03	.03½
Zinc Oxide, lead free	lb.	.06	.06¼
Zinc Stearate, bbls.	lb.	.20	.22

Oils — Fats — Greases

Babassu, tanks, futures	lb.	—	.08½
Castor, No. 1, bbls.	lb.	.10¾	.11½
No. 3, bbls.	lb.	.10¼	.11
Coconut (without excise tax)			
Manila, tanks, N. Y.	lb.	.05½	—
Tanks, Pacific coast, futures	lb.	.05¼	—
Cod, Newfoundland, bbls.	gal.	.52	Nom.
Copra, bulk, coast	lb.	.0305	.0310
Corn, tanks, mills	lb.	.08⅜	.08½
Cottonseed, crude, tanks, mill	lb.	.07¾	.08
PSY, futures	lb.	.09	.09¼
Degras, Amer., bbls.	lb.	.08¼	Nom.
English, bbls.	lb.	.08¼	Nom.
Neutral, bbls.	lb.	.12¾	Nom.
Greases, choice white bbls., fob			
Chicago	lb.	.08½	.09¼
Yellow	lb.	.08⅛	.08¼
House	lb.	.08⅛	.08¼
Lard, City	lb.	.13	.13¼
Compound tierces	lb.	.12¾	.13
Lard Oil,			
Extra, bbls.	lb.	—	.13¼
Extra, No. 1, bbls.	lb.	—	.12½
No. 2, bbls.	lb.	—	.12
Linseed, raw, bbls.	lb.	.1120	.1160
Tanks, raw	lb.	—	.1060
Boiled, 5 bbl. lots	lb.	.1240	.1260
Menhaden, crude, tanks, Balt.	gal.	.40	Nom.
Oiticica Oil, tanks	lb.	.11	Nom.
Oleo Oil, No. 1, bbls., N. Y.	lb.	—	.13
No. 2, bbls., N. Y.	lb.	—	.12½
Olive, denatured, bbls., N. Y.	gal.	1.50	Nom.
Foots, bbls., N. Y.	lb.	.11¼	Nom.
Palm, shipment	lb.	—	.05
Palm Kernel, shipment	lb.	—	.05¾
Peanut, domestic, tanks	lb.	.08¼	Nom.
Rapeseed Oil, denat.	gal.	.96	.98
Red Oil, distilled, bbls.	lb.	.11⅝	.12⅝
Saponified, bbls.	lb.	.11⅝	.12⅝
Tanks	lb.	—	.10¾
Sesame Oil, dms.	lb.	.11½	Nom.
Soya Bean, domestic tanks, saponified, f.o.b. West	lb.	.09½	—
Stearic Acid,			
Double pressed	lb.	.12½	.13½
Triple pressed, bgs.	lb.	.15¼	.16¼
Stearine, oleo, bbls.	lb.	.09⅝	.09¾
Tallow, special, f.o.b. plant	lb.	—	.08¼
City, ex. loose, f.o.b. plant	lb.	—	.08½
Tallow oils, acidless, tanks, N. Y.	lb.	—	.12
Bbls., c/l N. Y.	lb.	—	.12½
Teaseed Oil, crude	lb.	.09¼	.09½
Whale, refined	lb.	.1010	.1030

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THE PUBLISHERS.

(*As of July 26, 1937*)

Essential Oils

Almond, Bitter, U.S.P.	lb.	$2.75	$3.00
Bitter, F. F. P. A.	lb.	3.00	3.25
Sweet, cans	lb.	.90	1.00
Anise, cans, U. S. P.	lb.	.70	.75
Bay tins		1.35	1.50
Bergamot, coppers	lb.	3.70	4.00
Artificial	lb.	1.25	1.40
Birch Tar, rect. tins	lb.	.70	.75
Crude, tins	lb.	.14	.17
Bois de Rose, Brazilian	lb.	1.25	1.35
Cayenne	lb.	2.75	3.00
Cade, cans	lb.	.38	.52
Cajeput, native, tins	lb.	.55	.58
Calamus, tins	lb.	3.00	3.50
Camphor, Sassy, drums	lb.	.16	.17
White, drums	lb.	.18	.19
Cananga, native, tins	lb.	1.75	2.25
Rectified, tins	lb.	3.00	3.35
Caraway Seed	lb.	2.10	2.25
Cassia, Redistilled, U. S. P.	lb.	1.00	1.05
Cedar Leaf, tins	lb.	.95	1.10
Cedar Wood, light, drums	lb.	.26	.30
Citronella, Java, drums	lb.	.41	.42
Citronella, Ceylon, drums	lb.	.40	.42
Clove, U. S. P., tins	lb.	1.15	1.17
Eucalyptus, Austl., U. S. P. cans	lb.	.46	.54
Fennel, U. S. P., tins	lb.	1.05	1.10
Geranium, African, cans	lb.	4.60	4.75
Bourbon, tins	lb.	3.75	4.00
Turkish	lb.	2.90	3.00
Hemlock, tins	lb.	1.05	1.10
Lavender, U. S. P., tins	lb.	2.25	6.00
Spike, Spanish, cans	lb.	1.05	1.10
Lemon, Ital., U. S. P.	lb.	3.50	3.75
Cal.	lb.	2.60	—
Lemongrass, native, cans	lb.	.40	.50
Linaloe, Mex., cases	lb.	1.15	1.20
Nutmeg, U. S. P., tins	lb.	1.25	1.30
Orange, Sweet, W. Ind., tins	lb.	2.10	2.20
Italian cop	lb.	2.75	3.50
Distilled	lb.	—	.90
Cal.	lb.	2.50	—
Origanum, cans, tech	lb.	1.00	1.25
Palmarosa	lb.	3.10	3.20
Patchouli	lb.	5.00	8.00
Pennyroyal, dom.	lb.	1.65	1.75
Imported	lb.	1.50	1.60
Peppermint, nat., cans	lb.	2.35	2.50
Redis., U. S. P., cans	lb.	2.65	2.80
Petitgrain, S. A., tins	lb.	1.10	1.20
Pine Needle, Siberian	lb.	1.00	1.05
Rose, Natural	oz.	5.25	22.50
Artificial	oz.	2.00	3.00
Rosemary, Spanish, tins	lb.	.55	.70
drums	lb.	.50	.65
Sandalwood, E. Ind., U. S. P.	lb.	4.80	5.50
Sassafras, U. S. P.	lb.	.90	1.05
Artificial, drums	lb.	.39	.40
Spearmint, U. S. P.	lb.	1.90	2.00
Thyme, red, U. S. P.	lb.	.95	1.25
White, U. S. P.	lb.	1.05	1.35
Vetivert, Bourbon	lb.	9.00	18.00
Ylang Ylang, Bourbon	lb.	3.50	6.00

Aromatic Chemicals

Acetophenone, C. P.	lb.	$1.25	$2.25
Amyl Cinnamic Aldehyde	lb.	1.55	2.00
Anethol	lb.	1.15	1.20
Benzaldehyde, tech.	lb.	.60	.65
U. S. P.	lb.	1.20	1.30
Benzyl, Acetate	lb.	.55	1.00
Alcohol	lb.	.65	1.15
Citral	lb.	1.70	3.15
Citronellal	lb.	1.10	1.25
Citronellol	lb.	1.90	2.15
Citronellyl Acetate	lb.	4.50	7.00
Coumarin	lb.	3.10	3.30
Cymene, drums	gal.	.90	1.25
Diphenyl oxide		.70	1.00
Eucalyptol, U. S. P.	lb.	.58	.60
Eugenol, U. S. P.	lb.	2.00	2.50
Geraniol, Domestic	lb.	.75	2.00
Imported	lb.	2.00	3.00
Geranyl Acetate	lb.	2.00	2.50
Heliotropin	lb.	2.00	2.10
Hydroxycitronellal	lb.	3.50	9.00
Indol, C. P.	oz.	2.00	2.50
Ionone	lb.	3.25	5.50
Iso-Eugenol	lb.	3.00	4.25
Linalool	lb.	1.65	2.25
Linalyl Acetate	lb.	1.70	2.55
Menthol	lb.	3.50	3.60
Methyl Acetophenone	lb.	2.50	3.00
Anthranilate	lb.	2.10	2.75
Paracresol	lb.	4.50	6.00
Salicylate, U. S. P.	lb.	.40	.45
Musk Ambrette	lb.	4.20	5.00
Ketone	lb.	4.35	5.25
Xylene	lb.	1.25	2.00
Phenylacetaldehyde	lb.	4.80	8.00
Phenylacetic Acid, 1 lb., bot.	lb.	2.50	3.25
Phenylethyl Alcohol, 1 lb. bot.	lb.	4.00	4.50
Rhodinol	lb.	5.75	8.00
Safrol	lb.	.47	.50
Terpineol, C. P., 1,000 lb. drs.	lb.	.23	.25
Cans	lb.	.27	.30
Terpinyl Acetate, 25 lb. cans	lb.	.80	1.00
Thymol, U. S. P.	lb.	1.70	1.95
Vanillin, U. S. P.	lb.	3.75	4.00
Yara Yara	lb.	1.30	2.00

Insecticide Materials

Insect Powder, bbls.	lb.	.18	.20
Concentrated Extract			
5 to 1	gal.	1.30	1.40
20 to 1	gal.	4.75	5.25
30 to 1	gal.	6.90	7.50
Derris, powder—4%	lb.	.33	.38
Derris, powder—5%	lb.	.39	.44
Cube, powder—4%	lb.	.23	.28
Cube, powder—5%	lb.	.28	.33

Gums

Arabic, Amb. Sts.	lb.	.14½	.15
White, powdered	lb.	.17	.18
Karaya, powdered No. 1	lb.	.12	.13
Tragacanth, Aleppo, No. 1	lb.	2.75	3.00
Flake	lb.	.50	1.00

Waxes

Bees, white	lb.	.40	.42
African, bgs.	lb.	.27½	.28½
Refined, yel.	lb.	.35	.39
Candelilla, bgs.	lb.	.14½	.15
Carnauba, No. 1	lb.	.47½	.48
No. 2, N. C.	lb.	.40	.41
No. 3, chalky	lb.	.37	.38
Ceresin, yellow	lb.	.08½	.11
Paraffin ref. 125-130	lb.	.0455	.04¾

PRODUCTION SECTION

A section of SOAP devoted to the technology of oils, fats, and soaps published prior to Jan. 1, 1932, as a separate magazine under the title, *Oil & Fat Industries*.

Tank Gauge Set-ups

Variations in Liquid Level Indicators According to Plant Operating Conditions

By P. B. Shannon

The Meriam Co., Cleveland, O.

THE need for knowing accurately the level of liquids in tanks exists in many industries. Particularly in the field of oils, fats, soaps, glycerine, etc. are accurate figures on tank contents of material importance, a fact only too well known to plant operators. Liquid level instruments may merely indicate the conditions existing or they may be so designed that they also control the pumps which maintain that level. They may be of the Bourdon or dial type, or more generally of the manometer kind. Details given here refer to the well-type manometer instruments, since these are not only usually less expensive but also less liable to inaccuracy or to errors due to wear, for there is none.

The basic principle of the manometer when used as a tank gauge is that the pressure, due to the head of liquid in the tank, is transferred to the liquid in the well of the manometer and this pressure is balanced by the rise of the gauge fluid in the manometer. In some cases it is advisable to have the manometer mounted at the bottom of the tank and the liquid pressure connected directly under the fluid in the manometer well. In other cases it is advisable to mount the instrument at some distance from the tank and in this case it is necessary to run a line from the well of the manometer, through the top of the tank, into the bottom of the tank. Air is then forced in this line from the manometer to the bottom of the tank and as soon as the air pressure equals the pressure of the liquid head in the tank, the air will bubble out and cannot exceed the pressure of the liquid in the tank.

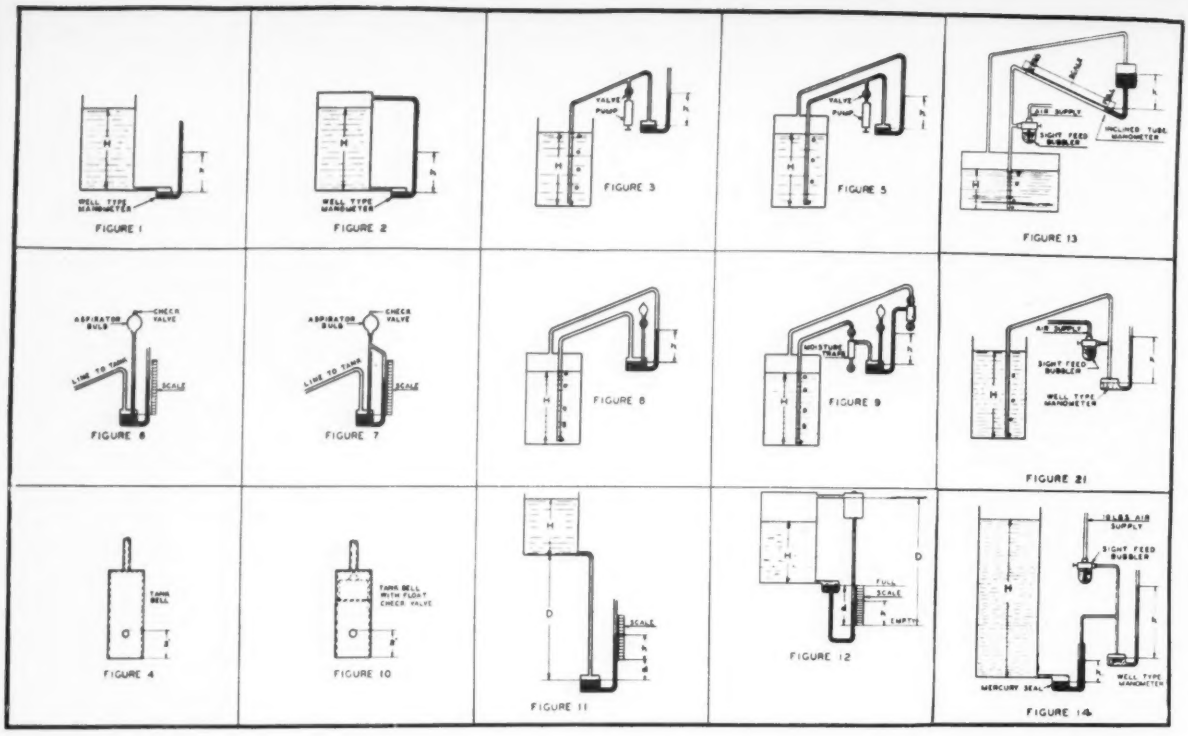
Inasmuch as the air pressure is the same in all parts of this line, this air pressure also acts upon the fluid in the manometer, causing the fluid to rise in the tube of the manometer until it just balances this air pressure. If both the liquid in the tank and the liquid in the manometer are of the same gravity, the instrument level will rise to the same height as that in the tank. If the specific gravity of the liquids differ, as is usually the case, the relative heights will be inversely as their specific gravities. Thus a mercury filled manometer measuring water tank level will show a rise of only about 1/14 of the water height, mercury being approximately 13.6 times as heavy as water. The manometer scale is, of course, calibrated accordingly, or if the dimensions of the tank are known it can be calibrated equally well to read in gallons or other convenient units.

To determine the length of manometer required, the following very simple formula is used:

$$h = \frac{H \times SpGT}{SpGM}$$

h = scale length of the manometer in inches
H = fluid depth in the tank in inches
SpGT = spec. gravity of the fluid in the tank with respect to water.
SpGM = spec. gravity of the meter fluid.

The accompanying illustrations show diagrammatically the installations of manometers on open and closed tanks. Fig. 1 shows the installation of a manometer on an open tank where the fluid is directly on top of the fluid in the well of the manometer. Since the top of the tank



and the top of the manometer are both open to atmospheric pressure, there is no need of any connection to the top of the tank. On this installation, the distance H and h vary inversely as the specific gravities of the fluid in the tank and the fluid in the manometer.

Fig. 2 shows the same installation except that the tank is closed and pressure may exist on top of the fluid in the tank. In this case an equalizing line is necessary so that the same pressure is on top of the fluid in the gauge and the fluid in the manometer, which therefore rises and falls in exact accordance with the rise and fall of the fluid in the tank.

Fig. 3 shows a manometer installation where the manometer can be located at any distance from the tank. In this installation the line runs from the top of the tank to the bottom of the tank and over to the well of the manometer. As the fluid rises in the tank, it would also tend to rise in the line leading to the bottom of the tank. This compresses the air in this line and would cause the fluid to rise in the manometer. To obtain correct readings, it is necessary to introduce air until the air bubbles out of the line at the bottom of the tank. This may be done by a hand pump as shown on the diagram. When the air is bubbling out of the line at the bottom of the tank, the air pressure is exactly equal to the fluid head above the point where the air bubbles out and this pressure acting on the fluid in the well of the manometer, causes it to rise in the manometer tube until it exactly balances this pressure. In this installation the manometer may be either above or below the tank and any distance within reason from it.

Fig. 5 shows the same installation except that the tank is under pressure and in this case an equalizing line must be run from the tank to the top of the manometer tube in a similar manner to that shown on Fig. 2. Fig. 3 and 5 require the use of a valve, check valve and pump. To get away from this complication, air is introduced into the line leading to the bottom of the tank through the liquid in the well of the manometer. This is shown diagrammatically in Fig. 6. By the use of an aspirator bulb, air is forced through the liquid in the well of the manometer, and upon releasing the bulb the fluid rises in this line leading to the aspirator bulb and effectively prevents any loss of air pressure by this liquid seal. The liquid will rise in this line the same height as shown in the glass tube of the manometer and the scale is calibrated to take care of the drop in the well as the fluid rises in both of these tubes.

On Fig. 7 is shown a bypass from just below the aspirator bulb to the top of the manometer tube The purpose of this bypass is to prevent the fluid being blown out of the gauge by introducing air too fast into the well of the manometer, before it is equalized in the line leading to the bottom of the tank.—for in such a case it may build up sufficient pressure to do this. By using this equalizing line, the liquid is depressed in the glass tube of the manometer when the bulb is squeezed, and cannot be blown out.

Fig. 8 shows this manometer with the aspirator bulb on the tank under pressure. This is for use on storage tanks such as used for gasoline or naphtha where the vapor pressure is only a few ounces. In

operating the gauge it is necessary to squeeze the bulb, open the valve and force air through the liquid in the well of the manometer. Then the valve is closed and more air is introduced into the pump, and the operation repeated until the liquid stops rising in the tube of the manometer.

Fig. 9 shows the same type of installation except that moisture traps are provided just ahead of the manometer. This is used where the liquid in the tank may be quite volatile and may condense at atmospheric temperatures. These moisture traps are for the purpose of keeping the condensed fluids out of the gauge itself.

Wherever the pressure on top of the fluid in the tank may be 5 lbs. or 10 lbs. pressure, it is recommended that a sight feed bubbler be used. Where this sight feed bubbler is used, it is necessary to run an air line, having approximately 15 lbs. pressure, up to the bubbler. This is shown diagrammatically on Fig. 21.

Due to the fact that practically all tanks collect sediment and dirt in the bottom, it is advisable that the first 2″ of fluid be not measured. A tank bell is usually fastened to the line leading to the bottom of the tank and this bell has openings, the top of which come 2″ from the bottom of the bell. The air bubbles out through these openings and consequently the first 2″ in the tank are not measured by the gauge but the scale reading starts at 2″ and reads up.

Fig. 10 shows such a tank bell with a float check valve. If the air pressure should fall in the line as the liquid would tend to rise in the tube, it lifts this check valve off its seat and closes off the line. This may be desirable on some installations. On Fig. 11 we show an installation where the manometer is some distance below the bottom of the tank and the connection is made from the bottom of the tank to the well of the manometer. In this case it is necessary to correct for the additional head D by raising the zero point of the scale a distance on the manometer; otherwise the installation is the same as shown on Fig. 14. On some installations of tanks under pressure, it is desirable to mount the manometer at the bottom of the tank and to have the same fluid as that in the tank on top of the gauge fluid in the glass tube of the manometer.

Fig. 12 shows such an installation and here a seal pot is used at the top of the tank and a connection made from this seal pot to the top of the tube of the manometer. This seal pot is then filled with the same fluid as in the tank and condensation of the fluid in the tank tends to keep the seal pot filled at all times. It will be noticed on this installation that the well of the manometer has been placed at the top and not at the bottom as shown in previous installations so that the zero on the scale is at the bottom. As the tank fills up and the level in the tank approaches the level of the seal pot, the fluid in the tube of the manometer rises toward the full mark on the scale.

Fig. 14 shows a mercury seal between the fluid in the tank and the manometer gauge. This installation would be used on such material as naphthalene, which becomes solid at ordinary temperatures and must be heated in order to become liquid. The mercury seal balances the pressure of the fluid in the tank and by running a line from the well of the manometer through the mercury in one leg of the mercury seal, the gauge can be calibrated in terms of height H of the fluid in the tank.

Fig. 21 shows the installation of the sight feed bubbler where it is desired to bubble air continuously into the line leading to the bottom of the tank. In the event the tank is under pressure, it is therefore necessary to have an equalizing line from the top of the manometer to the top of the tank.

Fig. 13 shows an installation on a tank under pressure where a sight feed bubbler is used and one leg of the manometer is inclined at an angle to give a longer scale reading for the displacement height of the fluid in the manometer.

These diagrams cover practically every installation encountered in the use of the manometer as a liquid level indicator.

◆

Camphor Seed Oil Like Coconut

The usual method of obtaining camphor from the camphor tree by subjecting the wood to steam distillation is very wasteful, as the tree is permanently destroyed. Camphor seed is largely discarded as waste. It has been found, however, that camphor seed oil can be recovered either by cold-pressing or by extraction with solvents. As much as 40 per cent of the seed weight can be extracted as oil with petroleum ether as solvent. This oil is similar to coconut oil in properties and is suitable for soap making. The development of this industry should therefore supplement the camphor industry. Hao Chen. *Ind. Research (China)* **6,** 92-3 (1937); through *Chem. Abs.*

◆

Textile Agent

Agents for use in the textile industry are prepared by condensing halogenated aliphatic carboxylic acids with aminosulfonic acids; e.g. chlorinated stearyl chloride is condensed with metanilic acid, or chlorinated copra oil is condensed with naphthionic acid. I. G. Farbenindustrie A.-G. French Patent No. 806,372.

◆

Soap in Vegetable Oils

In the determination of soap in vegetable oils by determining the difference of the acid numbers of the original oil and the oil which has been dissolved in ether, treated with hydrochloric acid and washed with water, the results give high values because of the carbon dioxide dissolved from the wash water. Using boiled-out distilled water and distilling off a considerable part of the ether after washing gave accurate results. K. Butkovskii and Ya. Vasilenko. *Masloboino Zhirovoe Delo* **12,** 389-90; through *Chem. Abs.*

Products and Processes

Pumice Soaps from Fatty Acids

In making abrasive soaps from fatty acids, heat the lye to boiling and then add the fatty acids in small portions with strong stirring. The soap is allowed to stand for a short time after saponification appears to be complete and is then tested for alkalinity. The soap is next run into large forms. Pumice powder is then stirred into the soap in small portions with a hand crutcher. One part of filling may be added with one part of abrasive. It is necessary to scrape the sides and the bottom of the forms in order to get thorough mixing. The soap is allowed to cool after mixing, either covered or uncovered. Adding the filling and abrasive in this way helps to cool the soap down and makes it thick enough so that there is no danger of the added ingredients settling to the bottom. A formula for this soap is as follows:

	parts by weight
Coconut oil fatty acids	100
Caustic soda, 38°Be	61
Fine sand	30
Pumice powder	20
Filling	26

Other suitable fatty acids may be used in place of those from coconut oil. *Allgeneine Oel- und Fatt-Ztg.* **34,** 196-9 (1937).

Liquid Shaving Soap

The following formula is for an emulsion-type liquid shaving soap, said to give an excellent lather with only a few drops:

	parts by weight
Stearine	8.4
Coconut oil	8.4
35% caustic potash	8.1
Calcium-free glycerine	8.4
Alcohol	2.4
Water	48.0
Petroleum jelly	0.65
Cymene	0.65

Warm the caustic potash and alcohol together to about 70°C. (158°F.) Warm separately the mixture of stearine, coconut oil, petroleum jelly and cymene to the same temperature. Stir the fat mixture in several portions into the alcoholic caustic potash solution, allowing for the increase in volume. The viscosity may be increased by superfatting with stearic acid. If the soap is adjusted to an excess alkalinity of 0.01 per cent. the consistency, after addition of the water, will be about the same as that of milk and the color pure white. By superfatting with 50-100 grams of excess stearic acid, the consistency when cold will be that of a smooth creamy emulsion with the same amount of water as above. Inclusion of a small proportion of triethanolamine stearate and also of sulfated fatty alcohols is advantageous by increasing wetting power. *Soap, Perfumery and Cosmetics,* **10,** 525-6 (1937).

Soap Powder

A 20 per cent soap powder can be made from the following: about 100 parts of tallow, hard fat, bone fat or bleached palm oil fatty acids, or a mixture of these; 102 parts of 38°Be. caustic soda solution, 80 parts of waterglass, 36-38° Be.; 270 parts of calcined soda ash, 348 parts of water. It is important to stir the mixture frequently during cooling so that the lumps will be small and cooled all the way through. *Seifensieder-Ztg.* **64,** 379 (1937).

Cleaning Cloths and Pads

A device for use in removing mistiness or bloom from polished surfaces, or for preventing its formation, comprises a cloth, pad, glove or paper impregnated with an inorganic or organic salt of a sulfuric ester of a higher fatty alcohol, with or without a hygroscopic agent such as glycerine, ethylene glycol, calcium chloride, etc. When inorganic salts are used, wetting agents such as cyclohexanol may be used also. Mild alkalies including soda ash and sodium phosphate may be added to the impregnating solution. For example, cloth is impregnated with a solution consisting of the sodium salt of the sulfuric ester of lauryl alcohol, cyclihexanol, glycerine and water, with or without a small amount of β-naphthol; paper is impregnated with the triethanolamine salt of the sulfuric ester of lauryl alcohol and glycerine in ethyl alcohol. J. Halden & Co., Ltd. and John Holden. British Patent No. 460,543.

Abrasive Cleanser

A paste, powder or liquid cleansing composition consists of soap, dilute acetic acid and one or more abrasives, e.g., ground whiting, chalk, powdered pumice or bathbrick, with or without water. A block form may be prepared by the addition of Portland cement or other setting or hardening agents. Bessie M. Pitman. British Patent No. 460,942; through *Chem. Abs.*

Washing Liquid

Washing liquids comprise a mixture of cellulose derivatives soluble in water, particularly ethers, with wetting agents. An example is a mixture of 400 parts of soda ash, 100 of heptadecyltaurine, 20 of hydroxyethylmethylcellulose, 120 of starch, 100 of sodium perborate and 260 parts of water. Kalle & Co. A.-G. French Patent No. 805,718; through *Chem. Abs.*

Cleansing Agents

Cleansing agents are prepared by condensing metanilic acid with halogen-containing aliphatic or cycloaliphatic carboxylic acids. Branched chain fatty acids obtained by oxidation of paraffin wax may be used and also fatty acids obtained from naturally occurring substances. An example is the condensation of metanilic acid with chlorinated stearic acid in the presence of soda ash. I. G. Farbenindustrie A.-G. British Patent No. 459,791.

Ribbon Soap

Soap is prepared in the form of thin-walled tubes by extruding liquid soap stock in the form of a ribbon-like thin-walled collapsed tube by pulling a vacuum on the tube at the moment of formation. The ribbons so formed are partially dried and cut while in this condition. Charles T. Walter. Canadian Patent No. 366,622.

Nickel in Hydrogenated Fat

A drop of a solution containing small amounts of nickel is brought into contact with filter paper impregnated with a 1 per cent alcoholic solution of dimethylglyoxime. The fat under examination is treated with hydrochloric acid, filtered and washed with hot water. The filtrate is evaporated to dryness on a steam bath, the residue taken up with 3-5 cc. of water and the iron precipitated with pyridine. After centrifuging, the resulting clear liquor is evaporated to dryness, ignited, taken up with a little hydrochloric acid and diluted to a definite volume. By comparing the shade produced on the filter paper with that of known amounts of nickel, the amount of the latter can be determined. Alfred Torricelli. *Mitt. Labensm. Hyg.* **28,** 36-50 (1937); through *Chem. Abs.*

Lignin Sulfonate in Soaps

Sulfite waste liquor is freed from iron, calcium and similar contamination and evaporated to dryness to give a yellow to white powder which is essentially the sodium salt of lignin sulfonic acid. This has detergent properties and makes a suitable addition to soap powders. A precaution in using it in this way is to avoid moisture in the soap. The moisture which is usually present in soap powders would partially dissolve the sulfonate powder so that the product would clump together and turn more or less brown. The problem is solved simply by using anhydrous soap. This gives a powder which is naturally much more efficient in use than a product containing from 20 to 40 per cent water.

The curd soap to be used is salted out twice in order to obtain a curd practically free from glycerine. The curd is cooled in the usual way and chipped. The chips are dried more thoroughly than usual so that they can be ground to a fine powder. They can be sieved or reground, to give a fine anhydrous soap powder. This is used in the following formulas:

1.	Ground curd soap	20%
	Lignin sulfonate	40%
	Calcined soda	40%
2.	Ground curd soap	15%
	Lignin sulfonate	40%
	Calcined soda	44%
	Ammonium chloride	1%
3.	Ground curd soap	20%
	Lignin sulfonate	40%
	Calcined soda	30%
	Sodium perborate	10%

These soaps remain colorless or only faintly yellow. Robert Krings. *Allgeneine Oel- und Fett-Ztg.* **34,** 192-6 (1937).

Cleanser for Greasy Hands

A preparation for application to the skin to remove grease consists of a mineral oil, vegetable oil, petroleum jelly or wool fat, together with less than 50 per cent of a mixture of a fatty alcohol having 12-18 carbon atoms with 10 per cent of an organic or inorganic salt of a sulfuric ester of an alcohol. Grease solvents such as cyclohexanol or methylcyclohexanol, and antiseptics may be added. J. Halden & Co., Ltd. and John Holden. British Patent No. 460,839; through *Chem. Abs.*

Pyrolysis of Coconut Oil

Coconut oil can be decomposed at the boiling point to yield free fatty acids, acrolein and a considerable amount of unsaponifiable matter which is mostly solid. Catalysts such as sodium hydroxide, aluminum chloride, zinc chloride, calcium chloride and iron, hastened the action and produced greater changes. The distillation range of the treated oil is too high to give a high yield of liquids of the motor-fuel range but about 20-50 per cent is within the kerosene range. Julian Banzon. *Philippine Agr.* **25,** 317-32 (1937); through *Chem. Abs.*

Dairy Cleaners

The important properties of dairy cleaners are wetting power, emulsifying power, dissolving power, deflocculating power and germicidal power. The various alkalies used for cleaning differ in their effectiveness respecting these properties. Silicate is the most effective in wetting and deflocculating power, caustic in dissolving and germicidal power, and phosphate in emulsifying power. The choice of the alkali for a cleaning job depends on the nature of the soiling material to be removed. Lee H. Minor. *Milk Plant Monthly* **26,** No. 3, 57-62 (1937).

Cleansing Agents

Products having emulsifying, cleansing and disinfecting properties are obtained by heating alkylene oxides with trialkylamineoxides in the presence of water. Organic solvents such as alcohols, acetone, ether and cyclohexanol may also be present and the products may be sulfonated. I. G. Farbenindustrie A.-G. British Patent No. 460,710.

Tobacco-seed Oil

Philippine tobacco-seed oil is similar to kapok, peanut and cottonseed oils and probably could be used for the same purposes as these oils. Its constants are: n_{30} 1.4714, Hanus iodine number 135.8, saponification number 190.5, unsaponifiable 1.41 per cent, acid number 16.8. It contains about 10 per cent of saturated acids. Aurelio O. Cruz and Augustus P. West. *Philippine J. Sci.* **61,** 161-8; through *Chem. Abs.*

Acidification of Palm Oil

Acidification is caused by hydrolysis of glycerides in the oil. This in turn is caused by a lipase existing in the pericarp of the fruit. Its action may be greatly favored by molds. The lipolytic action diminishes with the free fatty acid content of the medium. Carotene may catalyze the oxidation. The industrial oil is most satisfactorily stored in iron containers. R. Wilbaux. *Bull. agr. Congo Belge* **27,** 236-54; through *Chem. Abs.*

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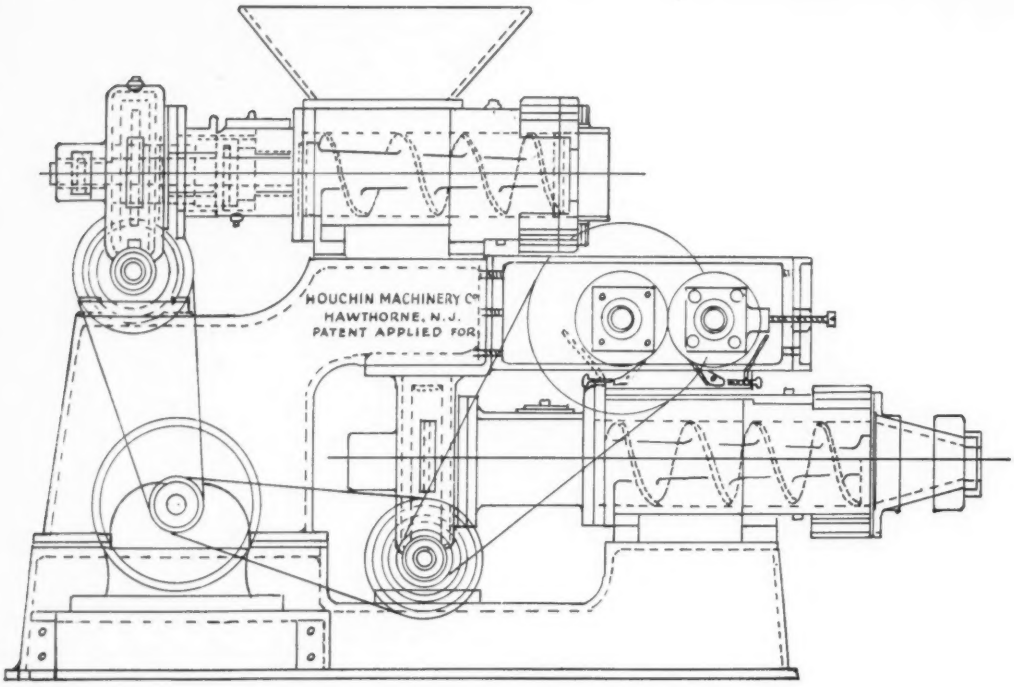

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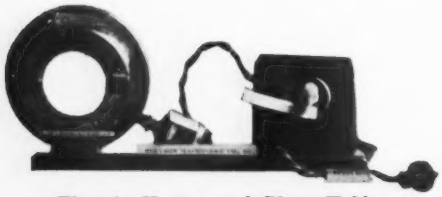

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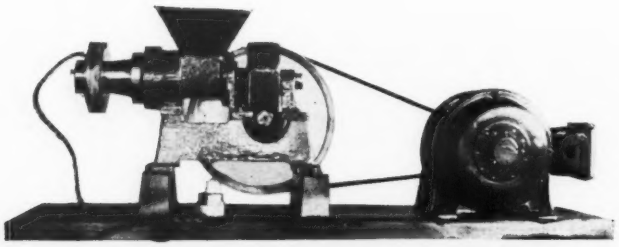
By using this unit instead of steam, gas or lamp a uniform heat can be maintained. No more blistered soap. Made to fit all Plodders.



Laboratory Plodder, complete with Motor, Electric Heater, and Plate Holder.

Triethanolamine Soaps

TRIETHANOLAMINE is a viscous hygroscopic liquid which should be kept in closed containers and stored in a reasonably warm place. Its soaps are neutral in aqueous solution, are very soluble, and possess unusual surface-active properties. Soaps may be made from triethanolamine, as well as mono- and diethanolamine, with greater ease than when made with metallic bases such as caustic soda. Fatty acids add directly to the nitrogen atom, which changes from the trivalent to the pentavalent condition without loss of water.

The general method of preparing a triethanolamine soap is simply to mix together equivalent parts of the fatty acid and triethanolamine. The equivalent of triethanolamine is specified between 137 and 142, according to slight variations in the small amounts of other ethanolamines which may be present. The approximate value of 140 may generally be used. If strict accuracy is desired, a sample of the base may be titrated with standard hydrochloric or sulfuric acid to a methyl orange end point.

To make triethanolamine oleate, mix about 140 parts of triethanolamine with 282 parts of oleic acid, stirring until homogeneous. Excess water should be absent during saponification. The soap forms immediately in the anhydrous state and is stable. It is a true organic soap, soluble not only in water and alcohols, but also in petroleum spirit, mineral oils and chlorinated hydrocarbons without the necessity of the presence of a large excess of free fatty acid. This property makes triethanolamine oleate of special usefulness in dry-cleaning soaps, since strong soap solutions can be prepared with relatively low viscosities and afford a wide range of dilution without separation of the soap, as in high pressure filter systems. Equivalents of potassium oleate and triethanolamine oleate may be mixed and will still retain almost the same solubility relationships as triethanolamine oleate. The following formula uses this principle in a dry-cleaning soap:

	parts
Oleic acid	52
Octyl alcohol	10.5
White spirit (turpentine substitute)	16.7
Potassium hydroxide	4.9
Water	9.3
Triethanolamine	6.6

The octyl alcohol and oleic acid are dissolved in the white spirit and a separate mixture made of the water, triethanolamine and caustic potash. Both mixtures are warmed to about 60°C. (140°F.) and the water mixture slowly stirred into the oily mixture.

In this formula the octyl alcohol plays the part of an auxiliary blending solvent, so that the unusually high water content of 9.3 per cent can be achieved without turbidity or separation. This high proportion of water has been shown by experience to promote thoroughness of cleaning and the removal of many types of stains, thus reducing the amount of "spotting" necessary.

The opposite type of dispersion, oil in water, is illustrated in the following formula for a rug and upholstery cleaning soap:

	parts
Oleic acid	28
Butyl cellosolve	5
Ethylene dichloride	13
Triethanolamine	16
Water	125
Isopropyl alcohol	14

The oleic acid, ethylene dichloride and butyl cellosolve are mixed and then added to a solution made of the triethanolamine and water. This is well stirred and sufficient isopropyl alcohol added to form a clear solution, thus yielding a product which is readily emulsifiable in water.

Triethanolamine stearate is a hard white soap, far more permanent in color than the softer oleic acid soaps. It is less soluble in petroleum solvents than the oleate. It is used in cosmetics.

Coconut fatty acids are used to produce shampoos with triethanolamine, giving a product with very mild alkalinity. Triethanolamine is too weak a base to saponify the glycerides, so that it is necessary to prepare the soap from the fatty acids. The following is a good formula for a shampoo:

	parts
Oleic acid	55
Coconut fatty acids	40
Triethanolamine	53

A shampoo should be entirely neutral so that the equivalent of the acid mixture and triethanolamine should be determined volumetrically.

Other products in which triethanolamine is used successfully are soapless shampoos, in which it is the base for neutralizing sulfonated vegetable oils and sulfated fatty alcohols. Combined with sulfonated oils for other purposes as in textile treatment, triethanolamine increases the oil solubility and reduces corrosion.

Naphthenic acid soaps made with triethanolamine are clear liquid products which are useful additions to ordinary liquid soaps for clarifying and lowering the temperature at which they congeal or develop turbidity. W. H. Dicken. *Soap, Perfumery and Cosmetics* **10,** 486-90 (1937).

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Monsanto Elects Hawn

R. J. Hawn, manufacturing director of several plants of Monsanto Chemical Co., St. Louis, has just been named a vice-president of the company.

HAVE *You* INVESTIGATED THE S & S FILLERS ?

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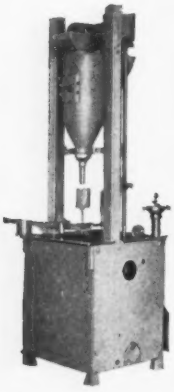

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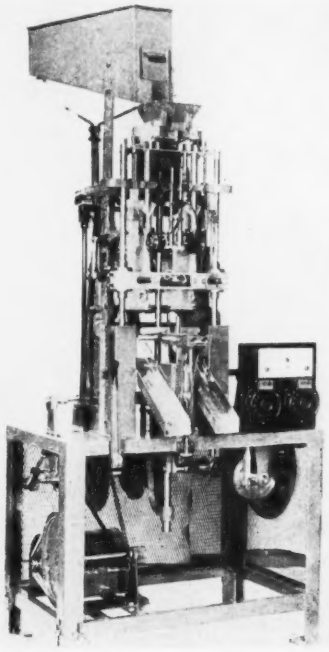
New Equipment

IF YOU want additional information on any of the items described below or if you want any of the bulletins, catalogs, etc., write to the MacNair-Dorland Co., Inc., 254 West 31st St., New York, mentioning the number of the item.

370—Transwrap Machine

Stokes & Smith Co., Philadelphia, has just taken over manufacture and sale of the Transwrap Machine formerly made by Trans-



parent-Wrap Machine Corp., New York. The machine is designed to fill and turn out cellophane packages at a rate of 60 to 100 per minute. Various feeding devices are available for powders, granular products, separate pieces and miscellaneous small articles. After filling, the ends of the package are automatically heat-sealed and packages are discharged through a delivery chute. The machine is available in two sizes—the smaller for packages up to 2½ x 10", and the larger for packages up to 4¾ x 10".

371—Condensate Return

Ingersoll-Rand Co., Phillipsburg, N. J., has just issued a new bulletin No. 1972-B, illustrating the Cameron Motorpump condensate return unit, and showing many of its applications. Copies of the bulletin are available.

Publications

372—New C & C Catalog

Carbide & Carbon Chemicals Corp., New York, has just issued the 1937 edition of "Synthetic Organic Chemicals", a 78-page booklet serving as a reference manual on specifications, properties and uses of a number of important organic chemicals. Copies are available through SOAP or direct from Carbide & Carbon offices.

373—Synthetic Perfumes

E. I. du Pont de Nemours & Co., Wilmington, has just issued a very attractive 16-page booklet captioned "Synthetics Bring New Era in Perfumes". The making of perfumes is discussed briefly and a separate section deals specifically with the perfuming of soaps and cosmetics. Copies of the booklet may be obtained through SOAP.

374—Insecticide Activator

Dodge & Olcott Co., New York, has just released a folder describing its new product "D & O Essenol Activator", an essential oil compound for increasing the effectiveness of insecticides and disinfectants. It is said to provide vapor toxicity, retard oxidation, act as a solvent for toxic resins, and serve as an emulsifying, wetting and spreading agent. Copies of the folder are available.

375—Soaps and Spotters

Caled Products Co., Brentwood, Md., has just issued two new booklets,—one on its wet cleaning soaps and the other on its line of spotters. "Caled" products are listed and described and the booklets also give helpful hints to cleaners on their wet cleaning and spotting problems.

377—Caustic Soda Bulletin

Pennsylvania Salt Manufacturing Co., Philadelphia, has just issued a new bulletin on caustic soda, giving the characteristics and properties of the various types and grades, as well as advice on handling. Some very interesting tabular and chart material is included on boiling points, viscosities, specific gravity, freezing points, density, baume, conversion tables, etc. Copies are available.

378—Verley Catalog

Albert Verley, Inc., Chicago, has just issued its new catalog of perfuming materials in the usual attractive form. It is spiral-bound and includes a series of interesting photographic studies. Of special interest is an article by Dr. Albert Verley on "The Fixation of Perfumes". Copies are available.

379—Churchill Catalog

Churchill Mfg. Co., Sioux City, Iowa, has just issued a new catalog illustrating and describing its complete line of floor finishes, liquid soaps, disinfectants, brushes, etc. Copies are offered.

Dry-cleaning Soap

A dry-cleaning soap suitable for use in chlorinated hydrocarbon solvents is as follows:

20 parts soft soap
2 parts oleic acid

Dissolve these in 40 parts of water plus 10 parts of denatured alcohol. To the solution add 20 parts of tetrachloroethane or trichloroethylene. J. Davidsohn and A. Davidsohn. *Soap, Perfumery and Cosmetics* **10,** 496 (1937).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Complete copies of any patents or trade-mark registration reported below may be obtained by sending 25c for each copy desired to Lancaster, Allwine and Rommel. Any inquiries relating to Patent or Trade-Mark Law will also be freely answered by these attorneys.

No. 2,083,013, Metal Cleaner, Patented June 8, 1937 by Michael W. Freeman, Detroit, Michigan. A cleaning compound for metal surfaces such as iron or steel, comprising an organic sulphonic acid, water, and a solvent for grease, the compound being substantially devoid of mineral acid and the salts thereof.

No. 2,083,821, Detergent, Patented June 15, 1937 by Waldemar Blech, Cleveland, Ohio, assignor to Thurlow G. Gregory. A relatively harmless, water rinsible detergent composition for the removal of glycerol phthalate synthetic resins and cellulose lacquer from the skin and consisting essentially of:

	Parts by Weight
Synthetic resin solvent matter from the group consisting of toluol, xylol and mixtures thereof, approximately	8½ to 60
A highly volatile cellulose lacquer solvent and selected from the group consisting of ethyl acetate, butyl acetate, pentyl acetate, ethyl propionate, ethylene-glycol-mono-ethyl-ether acetate, ethylene-glycol-mono-butyl-ether acetate and mixtures thereof, approximately	1½ to 40
Soap, approximately	8 to 20
Glycerine, approximately	5½ to 16
Carbon tetrachloride 0 to approximately	8
Water, approximately	15 to 60
An alkali from the group consisting of sodium carbonate, sodium hydroxide and mixtures thereof, approximately	1/8 to 20

No. 2,084,361, Metal Cleaning Composition, Patented June 22, 1937 by Byron M. Vanderbilt, Chicago Heights, Ill., assignor to Victor Chemical Works. A metal cleaning solution comprising the water soluble acid esteric reaction product of a dehydrated phosphoric acid and an organic compound containing a primary alcohol group.

No. 2,084,446, Soap and Glycerine, Patented June 22, 1937 by Henry W. F. Lorenz, Jersey City, N. J., assignor of forty per cent to Charles H. Wilson, New York, N. Y. The process of making soap and glycerine which consists in heating a mixture of fat and a base to a temperature in excess of the melting point of the resulting anhydrous soap and thoroughly agitating the mixture in an atmosphere free of air while intimately contacting the mixture with a stream of water vapor.

No. 2,084,483, Naphtha Soluble Soap, Patented June 22, 1937 by Theodore R. Donlan, Irvington, N. J., assignor to Standard Oil Development Company. Improved dry-cleaning composition comprising a dry-cleaner's petroleum naphtha containing in solution a soap composition containing about 10 to 30 per cent of potassium oleate, a substantially equal amount of water and an oil soluble alkali metal sulfonate derived from a fuming sulfuric acid treated lubricating fraction of a petroleum oil in an amount not less than 7 per cent, and a major proportion of a heavy hydrocarbon oil.

No. 2,084,506, Detergents and Wetting Agents from Petroleum Oils and Products Thereof, Patented June 22, 1937 by Raphael Rosen, Cranford, N. J., assignor to Standard Oil Development Company. Process for preparing improved wetting agents and detergents comprising treating an uncracked lubricating oil fraction of petroleum with fuming sulphuric acid at a temperature below about 32°F. in the absence of sulphur dioxide and neutralizing the resulting sulphuric derivatives to form soaps.

No. 2,084,632, Hydrogenated Naphtha Soap Gels, Patented June 22, 1937 by Carleton Ellis, Montclair, N. J., assignor to Standard-I. G. Company. A semi-fluid detergent composition in gel form consisting essentially of a water-soluble soap, incorporated in from about 1 to 50 parts by weight of a solvent consisting of hydrogenated petroleum naphtha boiling within the range from about 300 to about 550°F.

No. 2,085,318, Germicidal Preparation, Patented June 29, 1937 by Emil Klarmann, Bloomfield, N. J., assignor to Lehn & Fink Products Corporation, Bloomfield, N. J. A germicidal preparation comprising a bactericide of the class consisting of para-tertiary butyl phenol and its alkyl substituted derivatives, and a phenolic body having germicidal properties.

No. 2,085,471, Detergent, Patented June 29, 1937 by Warren T. Reddish, Cincinnati, Ohio, assignor to Emery Industries, Inc., Cincinnati. A detergent, comprising, an admixture of 10 to 60 per cent mahogany sulphonates, 90 to 40 per cent fatty acid soap, both of which are adapted to substantially dissolve in water, and a water soluble alkali one-third to thirty times greater in quantity than the quantity of alkali necessary to neutralize the mahogany sulphonic and fatty acid content of the mixture.

No. 2,085,691, Detergent, Patented June 29, 1937 by Alexander C. Brown, Mount Healthy, Ohio, assignor to Emery Industries, Inc., Cincinnati. The method of making an alkali soap, the method comprising admixing sodium carbonate and liquefied fatty acids in the absence of any substantial quantity of moisture, then atomizing the admixture by means of steam, the quantity of steam utilized being related to the quantity of sodium carbonate and fatty acids in admixture so that the fatty acids are saponified by the sodium carbonate while in the atomized condition and the particles so formed are hard and not tacky, the quantity of steam being lesser in amount than the amount required to dissolve the sodium carbonate.

No. 2,082,936, Detergents, Patented June 8, 1937 by Chester L. Baker, Berkeley, Calif., assignor to Philadelphia Quartz Company, Philadelphia, Pa. The method of preparing a dry, stable mixture of a desired hydrated sodium metasilicate and a compatible hydrated sodium metaborate as herein disclosed which comprises the following steps: (a) Preparation of a solution calculated to satisfy the chemical requirements of the desired sodium metasilicate hydrate; (b) Initiating crystallization of the sodium metasilicate hydrate and permitting it to continue until the mass becomes fairly thick; (c) Adding the ingredients required to produce the composition of the desired compatible sodium metaborate hydrate while cooling, if necessary, to maintain the temperature below the melting point of the desired sodium metasilicate hydrate; and (d) Initiating crystallization of the compatible sodium metaborate hydrate with further cooling, if necessary, to maintain the temperature below the melting temperature of the crystalline metasilicate and also below the transition point between the compatible crystalline metaborate and the crystalline metaborate of next higher melting temperature.

Arnold G. Schneider has joined the sales staff of A. C. Drury & Co., Inc., Chicago. Mr. Schneider, who is well known in the chemical and allied trade, was for many years connected with the Chicago office of Victor Chemical Works.

Non-Soap Detergents

(*From Page* 19)

The sulfonation is effected with sodium pyrosulfate and pyridine, and the product may be freed from inorganic salts by treatment with methyl alcohol, and then dried.

A sufide product which is useful as an emulsifying agent, as an agent for preventing the precipitation of lime soap in hard water and as an addition to soaps, soap preparations, bath essences and hair preparations, is obtainable from oleyl mercaptan, $C_{18}H_{35}SH$ by condensation with ethylene oxide. The latter compound is a useful tool in organic synthesis enabling ethers to be made readily. Thus, ethylene oxide would condense with ethyl mercaptan to give a thio-ether:

$$C_2H_5.S.H. + CH_2.O\text{-}\underset{|}{CH_2} = C_2H_5.S.CH_2.CH_2OH$$

At the same time, ethylene oxide will condense with itself to give di, tri or polyethylene oxides, which is what takes place when for example, a mercaptan is condensed with ten molecular proportions of ethylene oxide.

Condensation with C_2H_4O: 1 molar proportion ——— $C_{18}H_{35}.S.CH_2CH_2OH$

10 molar proportions ——— $C_{18}H_{35}.S.CH_2.CH_2(O.CH_2CH_2)_9.O.CH_2CH_2OH$

Another detergent product useful in preparing creams and ointments is prepared by condensing decyl mercaptan with epichlorhydrin, followed by condensation with 2 molar proportions of ethylene oxide. The probable formula is

$$C_{10}H_{21}.S.CH_2.CH.(OH).CH_2.(O.CH_2CH_2)_2OH$$

or

$$C_{10}H_{21}.S.\underset{\displaystyle CH.OH}{\overset{\displaystyle CH_2}{|}}\underset{\displaystyle CH_2.O.CH_2CH_2.O.CH_2.CH_2OH}{|}$$

when its relationship to glycerol and ethylene oxide will be seen at once.

A COMPARATIVELY new discovery in the world of detergents is the quaternary ammonium compounds, in which nitrogen is pentavalent. They are derived theoretically from the salts of ammonia, as for instance NH_4Cl in which the hydrogen atoms are alkyl or aromatic groups. Those quaternary ammonium compounds in which there is a fatty alcohol group are capillary active and possess dispersing and emulsifying power, which property is derived from the cation, not from the anion as in soap. Thus, a compound like cetyl-trimethyl-ammonium bromide behaves as a wetting and emulsifying agent and yet is inert towards metallic ions such as calcium, and is almost unaffected by strong acids.

The substance mentioned, cetyl-trimethyl-ammonium bromide ionises in aqueous solution to give a positive ion, $C_{16}H_{33}.(CH_3)_3N$, and a negative ion Br, as distinct from sodium oleate which gives sodium ions and oleate ions, the latter being the negative ion. Up to the present the principal uses of the quaternary ammonium compounds have been in connection with dyeing textile fibers, but there is no doubt that sooner or later these compounds will find application in the soap and cosmetic industry.

It is interesting to note then, that quaternary ammonium compounds possessing a sulfide group have been prepared, and that they are found to possess bactericidal and fungicidal properties. Possible uses for such substances are numerous in the medical world where cleansing power and antiseptic power are required together. One example will perhaps serve to show the type of compound in question and illustrate the mode of its preparation.

Dodecyl mercaptan is mixed with formaldehyde and treated with hydrogen chloride, when condensation takes place with loss of water to give dodecyl thiomethyl chloride.

$$C_{12}H_{25}.S.H. + O\underset{CH_2}{<}\!\!\diagup + HCl \rightarrow C_{12}H_{25}.S.CH_2Cl$$

The latter, is then stirred with dimethylaminoethanol, in which the nitrogen is trivalent, addition occurs and the pentavalent dimethyl-hydroxyethyl - dodecylthiomethyl - ammonium chloride is produced.

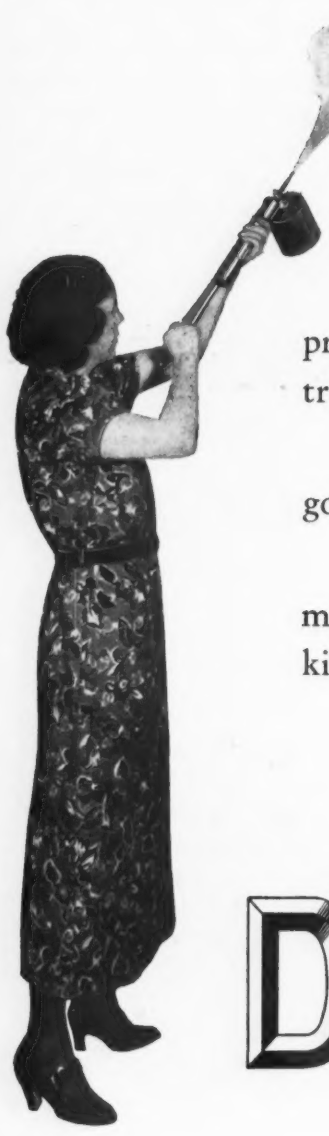
$$HO.CH_2.CH_2 \quad\quad Cl$$
$$CH_3 > N \quad + \quad | \quad \rightarrow$$
$$CH_3 \quad\quad CH_2.S.C_{12}H_{25}$$

$$HO.CH_2.CH_2. \quad Cl$$
$$CH_3 > N <$$
$$CH_2. \quad\quad CH_2.S.C_{12}H_{25}$$

The product is thus at one and the same time a sulfide and a quaternary ammonium compound and so may be expected to combine some of the advantageous properties of both.

Saponins

Saponins are glucosides occurring in soapwart, soapbark, etc. They are suitable as detergents for textiles, especially silk which is sensitive to the action of alkali. In water saponins form colloidal solutions which foam strongly in concentrations as low as 0.1 per cent. The unusual foaming power is not due to low surface tension as in soap solutions, but to a marked surface viscosity. Foam volume increases with increasing concentration. The solution has a color of its own which detracts from its desirability as a washing agent. To overcome this difficulty a direct addition to the wash liquor of sodium sulfite may be made in order to decolorize the solution. The amount of sulfite added should be just sufficient for decolorization; excess would decrease the foaming power. It is not advisable to combine saponin and soap. Saponins are toxic and are therefore not suitable for use in toilet and shaving soap, but are more properly used as textile and possibly as laundry washing agents. Hans-Joachim Henk. *Seifensieder-Ztg.* **64,** 395 (1937).



Meet Mrs. Smith!

She never heard of Peet-Grady tests, and probably can't pronounce pyrethrum the first try.

BUT—she knows what she wants, and it's good business for you to see that she gets it.

When she buys liquid insecticides, 1937 model, Mrs. Smith demands, along with supreme killing power:

Complete freedom from "Kerosene Breath"
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Assurance against staining.

DEO-BASE

Reg. U. S. Pat. Off.

The modern base for liquid insecticides enables you to give your customers what they want—and more.

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SANITARY PRODUCTS

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All of a better, more refined type than ordinary grades on the market, and have excellent covering power.

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American Pure
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Synthetic Insecticide Concentrate

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Rapid speed of action against insects makes possible impressive demonstration of your products. It promotes customer confidence in your materials. It results in consumer acceptance and repeat purchases of your insecticides. Lethane 384 is outstanding in speed of action. At 3% or greater concentration, Lethane 384 gives 100% knockdown of house flies in a Peet-Grady chamber *in less than three minutes.* Lethane 384 insecticides act with similar rapidity against crawling insects. Rapid speed of action or quick "knockdown" ability is essential in making your insecticides outstanding in efficiency. Use Lethane 384 and be assured of this characteristic in your products.

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Canadian Agent—P. N. SODEN & CO., LTD., LACHINE, P. Q., CANADA

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Leave nothing to chance.

Chief Entomologist

This Test Proves that McCormick's Pyrethrum and Derris Powders are GROUND FINER to KILL QUICKER

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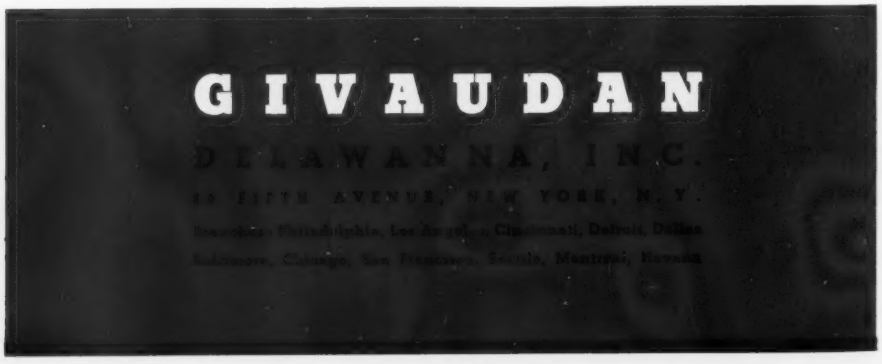
PYRETHROL 20 • PYRETHRUM POWDER • DERRIS POWDER
DERRIS EXTRACT • DERRIS RESINATE • ROTENONE CRYSTALS

PARATINTS do your coloring and scenting in half the time and with half the effort it takes to do either separately. They do both jobs better, too. PARATINTS are mixed in *exactly* the right proportions to give you the best results. Why not use their double-duty action to save yourself time, money and trouble? PARATINTS are available in six popular colors—already matched with appropriate scents that have proved beyond question their ability to cover the odor of paradichlorobenzene and moth balls,—and to perfume bath salts. PARATINTS are available in two price ranges—Series "A" and Series "B". Write for samples and quotations.



INSECTICIDES

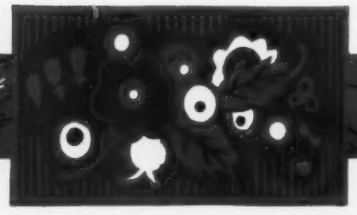
Out of the awkward stage, into the prime of a vigorous life—that's the insecticide business today. Those of us who watched it toddle, are today helping it stride to greater successes.

They Sell, Stay Sold and Repeat

It is no secret that advertising has helped, but billboards and magazines won't make Mrs. Housewife buy a second can of any spray that doesn't kill well and doesn't smell agreeable. Those are two attributes that are indispensable to repeat sales.

Kill Must Be Right

The most important thing a fly spray has to do is to *kill flies.* How the industry has progressed in that department! Today it is possible to produce a spray with a killing power measured scientifically in advance. Gone are the doubts; the kill is always right.



van Ameringen-

Manufacturers and Importers of Aromatic Essentials

AROMATIC CHEMICALS—ESSENTIAL OILS—FLAVORS—PERFUME SPECIALTIES—

COME OF AGE

Odor Must Be Right

What housewife wants to live in an atmosphere of kerosene? Fortunately that's no longer necessary. Makers of perfume material have not been idle. They have learned to mask unpleasant odors and to impart pleasant odors to insecticides. Today you have only to name your choice and you are sure of fly spray that smells right.

We were among the first makers of perfume materials to cooperate with the insecticide industry. We have worked out ways of covering solvent smells *without interfering with killing power.* You can draw on this long experience.

We'll Give Your Spray a Good Odor

Send us a gallon of your *unperfumed* spray. We'll deodorize or perfume it in several ways, and let you make your choice. We'll keep within your cost limits, and we'll promise you a better smelling, better selling spray than you ever had before.

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Odor determines popularity, and the experience of Norda in other lines doubly assures you of scent gradations—modern—in keeping with the times—and thus most popular.

Write for samples and prices.

★

DICHLOROMES NORDA

For Paradichlor Benzene

Series A $1.00	*Series B* $1.50	*Series C* $2.00
Bouquet A	Bouquet B	Bouquet C
Lilac A	Lilac B	Lilac C
Rose A	Rose B	Rose C
Violet A	Violet B	Violet C
Sweet Pea A	Sweet Pea B	Sweet Pea C
Gardenia A	Gardenia B	Gardenia C

SECTOROMES NORDA

For Fly Sprays

$.50 *lb.*	$1.00 *lb.*
Sectorome No. 1	Sectorome No. 11
Sectorome No. 2	Sectorome No. 22
Sectorome No. 3	Sectorome No. 33
Sectorome No. 4	Sectorome No. 44
Sectorome No. 5	Sectorome No. 55
Sectorome No. 6	Sectorome No. 66

Norda

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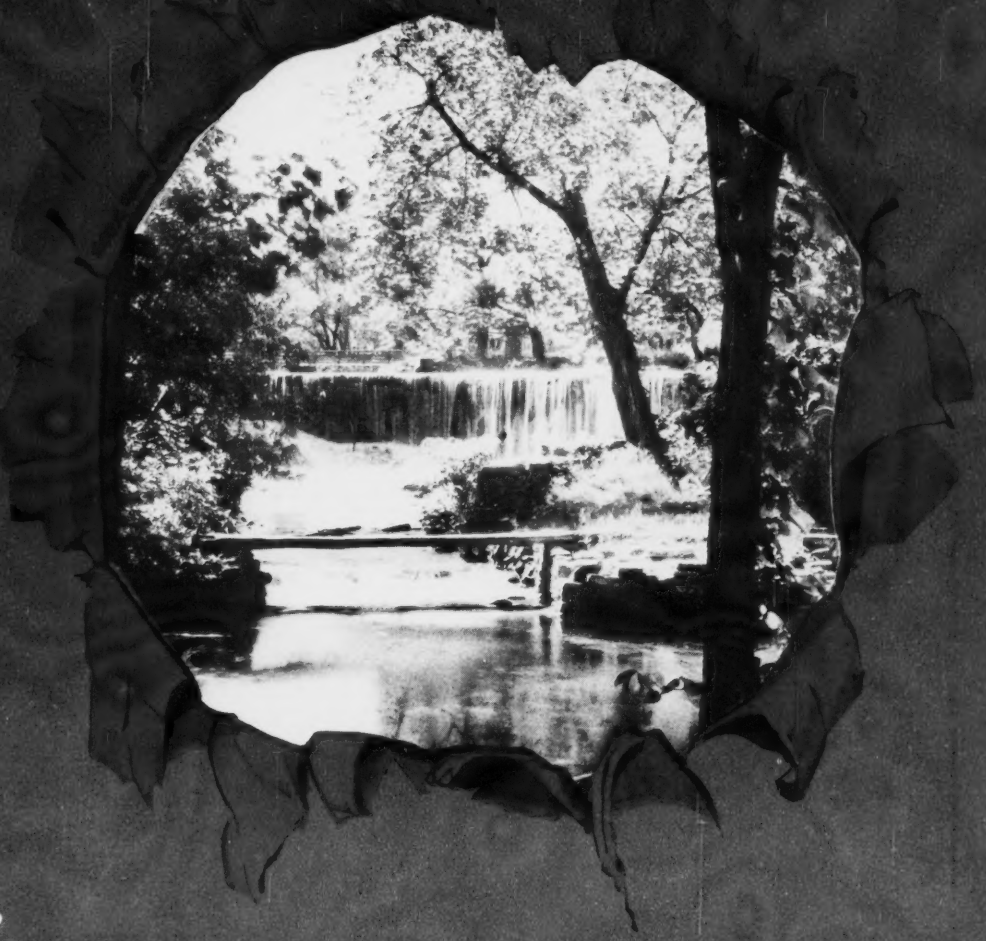
Southern Office
Candler Annex Bldg., Atlanta, Ga.

AQUAROMES

WATER SOLUBLE PERFUME OILS



WATER soluble perfume oils are consistently increasing in importance in the manufacture of Shampoos, Liquid Soaps, Theater Sprays, Deodorant Sprays, Formaldehyde preparations and many others.

The development of FELTON AQUAROMES is a major factor in this Field, enabling the perfuming of all these types of products without difficulty. Completely soluble in water to an absolutely clear solution, Aquaromes leave no trace of oil film or cloudiness.

AVAILABLE IN A LARGE SELECTION OF POPULAR ODORS . . . AND PRICED FOR ECONOMY!

• AQUAROMES—(Reg. U. S. Pat. Off.)

WRITE FOR SAMPLES TODAY!

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INCORPORATED

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NATIONAL *can* WIN ATTENTION!

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PES-TOX

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PYRETHRUM CONCENTRATE No. 124

One gallon mixed with twenty-four gallons of suitable oil base results in twenty-five gallons of crystal clear fly spray—with the maximum of killing power.

STABLE — UNIFORM
POWERFUL

Write for sample and *Low* Price.

STAINLESS CATTLE SPRAY

Ingredients are 100% Active

Stainless Cattle Spray is a standardized product, uniform at all times. Packed in one-gallon cans, six per fibre carton, and in five-, ten-, thirty- and fifty-gallon drums.

Samples will be cheerfully submitted upon request.

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SANITARY PRODUCTS

A Section of SOAP

Official Publication, Nat'l. Assn. of Insecticide & Disinfectant Manufacturers

AS far as the insecticide manufacturer is concerned, the 1937 season is a closed book. Too late now to make changes or to correct errors this season, such alterations can only be included in plans for 1938. And it is not too early to make these plans with experiences of the current season fresh at hand. All in all, 1937 has been a good insecticide year. It has had the advantages of generally good business conditions and employment, plus a plentiful supply of insects. Some manufacturers, it has seemed to us, and prominent ones at that, have appeared to lag behind the parade this year. Maybe we are wrong, but their products, their advertising and sales methods, did not seem to stack up well against some others. On the other hand, some products appear to have blossomed like a rose this year, to have gone ahead remarkably. Irrespective of which group any product may fit into, one fact stands out,—if your product did not show at least a small sales increase this season, then there is certainly something wrong somewhere which should be looked into rather carefully before plans for 1938 are made.

RECENTLY we heard of a large university and two hotels which have ceased to employ outside exterminators on the usual contract. In each case, the conclusion was apparently reached that exterminating service is unsatisfactory. Instead of switching to some other exterminator, each has hired the necessary men to do their own exterminating work. The fact that three large institutions feel that they must do their own exterminating to do it properly, is the thing which hurts the exterminating industry most. It is an impression not uncommon today among large property owners and operators.

Several far-seeing leaders in the exterminating field would guide the industry to more solid ground on higher levels if it would follow. However, there are still too many who cannot see it this way and prefer to take their chances as conditions now exist. More lost business is inevitable under the circumstances.

FROM California, from an official of the state, comes a strong criticism to us of termite control methods, and of some of the writings and statements of certain termite authorities. It is held that the tendency by some people to belittle the menace of termites is not in accordance with the actual situation as it exists on the West Coast. Stronger pest control laws are needed, it is held, to regulate the operator as well as the termites. And it is concluded that if certain methods are not changed, "the entire industry is . . . going to be accused of being racketeers of the worst type." This confirms many complaints and accusations on termite work, the continuation of which only means lost business and lost reputation.

IN almost all branches of the sanitary products industry, higher raw material costs indicate that prices for finished products should also be higher. It might be an interesting comparison to check up prices of finished goods a year ago with those of today, and at the same time compare raw material costs. The eyes of some manufacturers might be opened.

Hypochlorite

ADVERTISING CLAIMS

Discussed in the light of recent activities of the Federal Trade Commission and the every-day uses of the products

By Dr. C. A. Tyler

CHLORINE bleach for domestic use is made by many manufacturers and sold under many trade names, but is essentially the same product in all cases, a 5 per cent solution of sodium hypochlorite. The method of manufacture is so simple and the ingredients so inexpensive that many of the smaller concerns require little in the way of equipment and less in personnel.

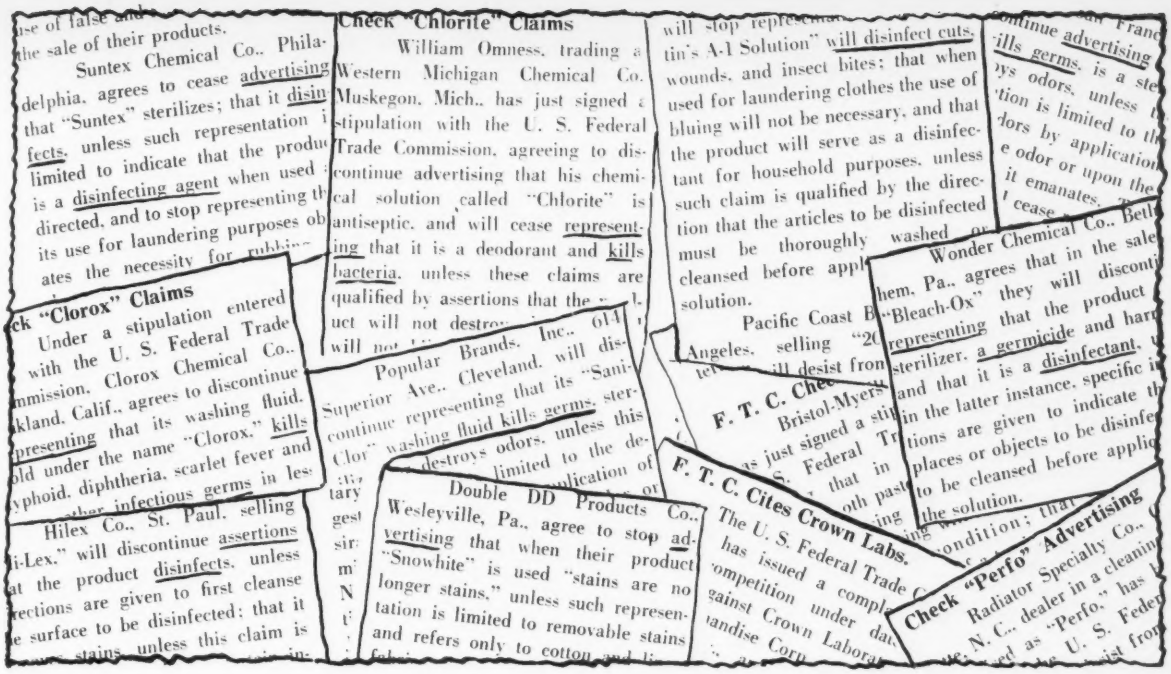
The tendency has been to carry in advertising copy as many and as varied claims as possible. Since no one wants to give the public the impression that the other fellow's product will do more than his, these claims have a strong resemblance and cover pretty much the same ground. Many of the hypochlorite products have recently been investigated by the Federal Trade Commission, whose duty it is to ban misleading advertising of products sold in interstate commerce. A considerable number of the companies have signed stipulations which relate to the wording of their advertising matter.

While the intention of the Commission is to protect the public, their method, or possibly their power of doing so, does not seem to meet the situation. The distinctions which they make, strike the impartial observer as being rather futile, to say the least. In other words, much ado about nothing. This seems particularly true if looked at from the point of view of the housekeeper who is going to use the product. No doubt some of the claims ordinarily made are far fetched and better left out. Probably not all of them are susceptible to a scientific approach, but as far as it can be applied, this type of scrutiny should be helpful.

One of the claims made is that the product disinfects cuts, scratches, bruises—in other words, that it can be used as a general-purpose household antiseptic. This brings up the question as to what is meant by disinfectant and antiseptic and how to know what products have or do not have these properties. Dr. Austin M. Patterson, a recognized authority on scientific nomenclature, defined these terms* in the American Journal of Public Health 22, No. 5, (1932), and in the 1934 edition of Webster's New International Dictionary, of which he is a special editor, as follows: A *disinfectant* is "an agent that frees from infection; usually a chemical agent which destroys disease germs or other harmful micro-organisms (but not, ordinarily, bacterial spores);—commonly used of substances applied to inanimate objects." An *antiseptic* is "a substance that opposes sepsis, putrefaction or decay; one that prevents or arrests the growth or action of micro-organisms, either by inhibiting their activity or by destroying them;—used especially of agents applied to living tissue." A *germicide* is "any substance or agent which destroys germs or micro-organisms; specifically, one destructive to disease germs."

The last relates to the term

* Following research instigated and financed by the Nat'l. Assn. of Insecticide & Disinfectant Manufacturers.



"germ" which is rather loosely applied in popular usage to mean disease germs or pathogenic bacteria. While these terms are more or less synonymous, certain distinctions are noted. Germicide is a broad term, covering the other two. Disinfectant is applied to killing micro-organisms on inanimate objects. Antiseptic is applied to killing them on living tissue, but may also refer to a milder product which merely inhibits the growth of micro-organisms.

The U. S. Food and Drug Administration, in Circular No. 198, U. S. Department of Agriculture, permits the use of the term "antiseptic" according to the following: "Products such as salves, ointments and dressings that remain in contact with the body for long periods of time, may be designated properly as antiseptics if they inhibit the growth of bacteria. On the other hand, mouth washes, douches, gargles, and preparations of like nature are in contact with the body for but brief periods of time and exert negligible inhibitory action. These may be described properly as antiseptics only if they will destroy bacteria under the conditions of use; that is, in the dilutions recommended and in a period of time comparable to that in which they would have an opportunity to act when used as directed."

There is no question but what sodium hypochlorite solution has germicidal properties. That these cannot be evaluated quantitatively in terms of phenol coefficient is obvious. The Food and Drug Administration seems to feel much safer when dealing with disinfectants which can be expressed in terms of phenol coefficients. Although they recognize that other disinfectant products exist, they don't quite know what to do about them, which results in a situation that is rather unsatisfactory all around.

In Circular No. 198 of the U. S. Department of Agriculture they state: "Other groups of disinfectants in common use, for which the phenol coefficient method of testing is not well adapted, are those compounds containing chlorine as the active agent as well as oxidizing agents in general. These are affected so materially by the presence of organic matter that a phenol coefficient statement may grossly misrepresent their value under practical conditions of use and is very apt to be misleading to the consumer when placed on the label."

The presence or absence of organic matter has nothing whatever to do with a phenol coefficient statement, since the latter simply is not applicable to hypochlorite products. Although the Food and Drug Administration is supposed to be an authority on the subject of antiseptics and disinfectants, to which other departments may refer for information, they leave the question of hypochlorites hanging in the air. Nevertheless, the value of these is widely recognized in practice. The 21st edition of the United States Dispensatory describes the use of commercial hypochlorite as follows: "The solution of chlorinated soda possesses the germicidal value of its available chlorine. For the disinfection of large masses of organic matter it is inferior to chlorinated lime, not merely because of its greater cost, but also because of its lower content of chlorine. It is, however, an excellent agent for the disinfection of various utensils which are not injured by its bleaching action, such as clinical thermometers and

glass or chinaware which have been used by patients with contagious disease."

A nationally advertised commercial product which is widely accepted as a household antiseptic is merely a more dilute solution of sodium hypochlorite than the group of products with which we are dealing. A proper dilution of chlorine bleach would therefore produce the equivalent of this product. When the 5 per cent solution is accompanied by correct directons for dilution and use, the same claims can be legitimately made as are permitted on this well known antiseptic and medicinal agent.

Long Used in Surgery

HYPOCHLORITE solution of the proper concentration has been widely recognized and long used as a surgical antiseptic. Modified Dakin's solution, the name under which it is known in this connection, is a 0.5 per cent solution of sodium hypochlorite. Its preparation from a 5 per cent solution (the commercial concentration), is covered in the Pharmacopoeia of the United States. The U. S. Dispensatory describes its use as follows: "Dakin's solution is used solely for its antibacterial properties especially in the treatment of surgical wounds. Tilley (J. Agr. Research 20, 85, 1920) has shown that sodium hypochlorite in germicidal power ranks with bichloride of mercury. In the absence of organic material, one part in 25,000 kills most nonsporulating bacteria, and one part in 200 killed the highly resistant anthrax spores after two hours. In the presence of blood serum, however, the germicidal action is very much weaker, a one to 400 solution requiring two hours to kill the ordinary vegetative forms; this latter strength is approximately equivalent to 50 per cent of the official surgical solution. The peculiar value of this solution in surgery depends, however, not merely on its antibacterial action, but to a large extent upon its power of dissolving necrotic tissue, and hence aid in getting rid of undesirable detritus. This solvent power, however, may become very dangerous in some conditions."

What Dilution Kills?

GERMICIDAL power is a function not only of the concentration of antiseptic but also of the time of contact. To translate the above figures into terms of hypochlorite solution, the ordinary commercial product is roughly 5 per cent or about 1 part of hypochlorite or 1 part of available chlorine to 20 parts of solution. The figures for per cent by weight of sodium hypochlorite and for per cent of available chlorine are close enough together to be considered identical for our purposes. In the absence of organic material, one part in 25,000 kills most nonsporulating bacteria. These include the kinds commonly encountered, such as those of tuberculosis, typhoid, *Staphylococcus aureus*, etc. Since the commercial hypochlorite product is 1 part to 20, and since there are 16 cups to a gallon, one cup of 5 per cent solution is effective in 78 gallons of water in the sense that it will kill all ordinary disease germs in this concentration. This corresponds to the 1 to 25,000 concentration quoted. This would mean that dishes from a contagious ward in a hospital, after being washed, could be sterilized with a solution containing 1 cup of 5 per cent hypochlorite in 78 gallons of water. Practically, no doubt a stronger solution would be used to allow a wide margin of safety.

In the presence of organic matter, such as on a cut as for surgical purposes, when blood is present, antiseptic action is greatly decreased. Here a 1:400 concentration requires two hours to kill ordinary micro-organisms. This corresponds to a 1:1 dilution of Dakin's solution with water. Properly diluted, the hypochlorite products can therefore be recommended for disinfecting cuts and scratches. Unless the skin is broken there seems no reason to recommend it for bruises.

Another form of bacteria, less frequently encountered, are spore-forming bacteria. These are much more resistant than the common types. The two best known are those producing anthrax and tetanus. Anthrax is a disease more common to animals than to man but occasionally transmitted to the latter. Tetanus is more commonly known as lockjaw. To go back to our definition of disinfectant, it is seen that a disinfectant does not necessarily kill sporulating bacteria. However, the above quotation shows that a 1:200 concentration of hypochlorite, which is Dakin's solution, kills the highly resistant anthrax spores after two hours of contact.

Effectiveness in Drinking Water

AN example of an application of the greatest possible dilution of hypochlorite is in the treatment of the water supply when there is any question as to its purity. Drinking water which is otherwise pure but which may carry disease germs, is freed from these by a concentration of 0.2 part per million of available chlorine. It is desirable to keep the amount of treating agent as low as possible so that it will not give an off-taste to the water. Chlorine played a very important part in keeping the drinking water free from disease germs under war conditions in France. It has for years been a first resort during emergencies, particularly when normal water supplies have broken down.

When recommended to disinfect toilets, sinks, garbage pails, etc., directions should always be given to wash these thoroughly first before adding the hypochlorite solution. This is to remove organic matter with which the hypochlorite would quickly react and be wasted. It is to the advantage of the manufacturer to instruct the consumer how to use his product to the best advantage. Otherwise the consumer may expect the impossible,—and be disappointed.

Against Athlete's Foot

FOR the prevention and treatment of ringworm or athlete's foot, hypochlorite solution is well known. Its action here is as an oxidizing agent and antiseptic in attacking this particular fungus. Swimming pools in hotels and gymnasiums usually provide a relatively strong hypochlorite solution as a foot bath through which the person walks or in which he stands for a moment before entering the pool. Swimming pools themselves are usually chlorinated to kill microorganisms which might come from a person's body or bathing suit. Direct treatment of athlete's foot with hypochlorite solution is recommended by some physicians. A five per cent solution can be used for only a short time before the skin becomes sensitive. More dilute solutions are milder and should be just as effective over a longer period of contact. Sometimes one sees warts classed with ringworm in the advertising of these products. Hypochlorite is very different chemically from the usual substances recommended for removing warts.

Occasionally one finds the claim that hypochlorite solution is beneficial as a hand wash. This sounds like a cosmetic claim, a claim of being beneficial to the skin, and is in that sense misleading. If the statement were enlarged to the effect that the product could be diluted and used to whiten the hands, remove vegetable and fruit stains, that would be another story. Another possible interpretation is that it is intended as a hand wash for persons caring for sick people, particularly those with contagious diseases. However, the word "beneficial" does not imply either of these interpretations and should therefore be changed.

Deodorant Claims

ANOTHER general claim made for these products is that they destroy odors or serve as a deodorant. Deodorants fall into two classes:—those which cover up one odor with another and those which remove a putrefactive odor by preventing the decay of organic matter and removing the cause. An example of the first class is the use of sprays in theaters and para blocks in toilets. Hypochlorite solution belongs to the second class of deodorants. In dilute solution it carries very little odor of its own so that it does not necessarily replace one odor with another. Its deodorant action is closely tied in with its disinfectant properties. It can not be expected to deodorize a pail of garbage, but it can be counted on to remove the residual odor from a garbage can that has been emptied and cleaned. The deodorant power can be summed up by saying that wherever hypochlorite disinfects, it also deodorizes.

The broad claim that these products remove stains has been criticized and should be made more specific. In fact, the claim that the product will remove ink stains has appeared in some of the advertising. This would be true for the few inks that contain dye only, but most inks contain both dye and iron tannate. The dye gives the immediate color and the iron the more permanent color. Printer's ink is a carbon ink and could not be removed by hypochlorite. The use of chlorine bleach in the laundry to remove fruit and other organic stains by oxidation is too well known to require comment. Iron stains are not removed and should not be mentioned in this connection. "Removes stains from medicines" covers a great deal, but would apply to most organic solutions and to iodine. Hypochlorite can therefore be expected to remove most medicine stains, but in a particular case it would be necessary to know the nature of the medicine in order to state specifically whether it would be removed.

The following rather amusing claim was copied from a label: "For baths—Use half cupful of....to a tubful of water. It destroys body odors, provides an exhilarating bath; it also freshens the skin." This illustrates the point mentioned above that the effort of the manufacturer seems to be to create as many uses for the product as possible even at the risk of being slightly absurd. It would not seem that a faint odor of chlorine would add anything to one's satisfaction in being clean. That this concentration would be antiseptic is unquestioned in view of our translation of a 1:25,000 ratio mentioned above. However, such sterilization of the skin would last only during the brief interval before dressing. Perspiration, which is responsible for body odor, is removed by soap and water. Whether a bath is considered exhilarating or not would seem to depend on the individual point of view.

The Stipulations Signed

A FEW important examples of the stipulations signed by companies making these products, are the following:

Clorox Chemical Company, Oakland, Cal., agrees to discontinue representing that its washing fluid, sold under the name "Clorox", kills typhoid, diphtheria, scarlet fever and many other infectious germs in less than 10 seconds. The company also will cease advertising that Clorox will remove stains and destroy odors, unless such representations are properly qualified. The company admitted that it is not generally practical to use Clorox to kill odors in the air, and that the product will not remove some stains.

Durand-McNeil-Horner Company, Chicago, selling "Klor-O-Wash", will desist from advertising that this cleaning compound is a deodorizer and disinfectant for chinaware, glassware, pots, pans, washbowls, bathtubs, tile floors, linoleum and sick room equipment unless such representations are accompanied by instructions to the effect that the places or articles to be sterilized and disinfected should be thoroughly washed before using Klor-O-Wash.

J. L. Prescott Company, Passaic, N. J., agrees to cease representing that "Oxol", a cleaning compound, destroys odors or kills germs, unless it is clearly indicated in connection with such claims that

(*Turn to Page* 115)

Test no.	Cage 1, 3/31 No. flies	No. dead	Percent dead	Cage 1, 4/5 No. flies	No. dead	Percent dead	Cage 1, 4/15 No. flies	No. dead	Percent dead	Cage 1, 4/17 No. flies	No. dead	Percent dead	Cage 1, 4/18 No. flies	No. dead	Percent dead
1	205	128	62.4	164	82	50.0	145	96	66.2	114	63	55.3	124	79	63.7
2	150	104	69.3	145	88	60.7	116	74	63.8	176	126	71.6	134	109	81.3
3	187	138	73.8	136	75	65.1	103	67	65.0	109	75	68.8	100	74	74.0
4	154	116	75.3	173	111	64.2	104	63	60.6	157	125	79.6	131	117	89.3
5	159	116	72.9	151	111	73.5	126	99	78.5	142	112	78.9	100	91	91.0
6	156	128	82.1	170	127	74.7	141	116	82.3	139	118	86.1	104	95	91.3
Sum	1011	730		939	594		735	515		835	619		693	565	
Cage Av'ge		72.20			63.25			70.06			74.13			81.52	
χ^2		18.922, 5d.f.			33.139, 5d.f.			23.266, 5d.f.			37.784, 5d.f.			47.792, 5d.f.	
P		<0.01			<0.01			<0.01			<0.01			<0.01	

Test no.	Cage 1, 5/15 No. flies	No. dead	Percent dead	Cage 2, 5/13 No. flies	No. dead	Percent dead	Cage 1, 5/18 No. flies	No. dead	Percent dead	Test border averages Totals flies	Totals dead	Percent dead
1	133	73	54.9	100	66	66.0	159	101	63.5	1144	688	60.13
2	127	61	48.0	165	106	64.2	146	90	61.1	1159	758	65.40
3	117	70	59.8	137	101	73.7	125	80	64.0	1014	690	67.06
4	115	68	59.1	143	111	77.6	162	113	69.7	1139	824	72.34
5	141	72	51.0	149	114	76.5	140	112	80.0	1108	827	74.63
6	129	95	73.6	165	145	87.8	145	106	73.1	1147	930	81.08
Sum	762	439		859	643		877	602		6711	4707	
Cage Av'ge		57.51			74.85			68.64			70.14	
χ^2		21.574, 5d.f.			29.800, 5d.f.			16.334, 5 d.f.			150.545, 5 d.f.	
P		<0.01			<0.01			<0.01			<0.01	

For cage averages, $\chi^2 = 139.725$, 5 d.f., $P = <0.01$;

For the several cages, $\chi^2 = 228.611$, 40 d.f., $P = <0.01$

Table 1. Percent mortalities of flies from tests of the Official Method with no paper on the floor of the testing cabinet.

A Statistical Analysis of FLY MORTALITY DATA

By Christopher A. Murray*

Baldwin Laboratories, Inc.

THE Standardization Committee of the National Association of Insecticide and Disinfectant Manufacturers has long been engaged with the difficult problem of setting forth the conditions of a dependable method of evaluating liquid insecticides. A sound step in the right direction was taken in 1932 when the committee adopted the Peet-Grady Method[1] as the official method of the association. Since 1932, however, numerous difficulties have been encountered. Laboratories have experienced a wide variation in per cent kills of tests made upon samples of the same toxicities, have been unable to duplicate a series of tests, and there has been a great lack of agreement between per cent kills obtained by different laboratories on the same sample. The cooperative tests made in 1935-36, Dr. F. L. Campbell's unofficial report[2] of the results, and the consequent adoption by the committee of an Official Control Insecticide have been noteworthy advances in the search for a trustworthy basis of insecticide comparison. Despite these investigations, at present the situation is admittedly open to improvement.

It is hoped that the present analysis† of toxicity tests made at the Baldwin Laboratories will be considered as an extension of the research already commenced by the committee. The findings, subject to the check of other laboratories, are offered with the considered opinion that they are definitely a satisfactory conclusion to the liquid insecticide evaluation problem of the association. Since the objectives could not have been reached and proved without the use of biometric statistics, such statistical tools as are appropriate to the treatment of mortality data are indicated. With the expectation that those interested will later familiarize themselves with statistics, the bulk of the emphasis of this paper will be placed upon the different factors causing discrepancies in fly mortality data.

In the present analysis, by means of simple arithmetic and the use of a calculating machine, a constant[3] is obtained from a series of per cent kills. By looking in a table of such constants[4], one may tell whether or not the groups of flies giving the individual per cent kills and from which an average mortality is obtained acted in accord with each other (were homogeneous) or whether something besides the insecticide being tested also caused deaths and interfered with strictly insecticidal influence. When this constant indicates something besides the insecticide also has influenced the per cent kills, it is unwise to compare an average mortality obtained with another average mortality; for, if a difference in toxicity of samples is indicated, with an unknown quantity having influenced one or both the averages, one cannot know whether the inequality is due to the insecticides of different killing power, whether the inequality is due to fluctuations of the unknown quantity, or whether it is a combination of both factors. If there are several unknown quantities, the situation is even worse.

From the foregoing, it can be seen that the starting-off point of the search for a dependable comparative mortality test lies first in finding some way to form a group of flies from which uniform batches of 100-200 may be drawn for testing; after such batches are obtained, the testing procedure must be designed so that the insecticide effects only of each test will cause mortalities. Once these conditions are established, it is but a matter of experimental design to evaluate any reasonable number of insecticides simultaneously.

In the present instance, the most feasible large group of flies from which to obtain small representative groups for testing is a rearing cage full of flies. Consequently, series of tests have been made to determine under what conditions successive batches of flies from a rearing cage would react similarly to an insecticide. The flies used in the tests of the Official Method, Tables I, II, and III, were reared in battery jars with horse manure, dried milk, and irradiated yeast as the cultural media. The emerging flies were introduced into the rearing cages by means of conical screens fitted over the tops of battery jars and which protruded through a hole in the bottom of the rearing cages. The rearing cages were 1 x 1 x 2 feet with an eight inches long six inches high hinged door on one side. No attempt was made to put like-appearing flies into the rearing cages except that care was taken that the age of the flies in a particular cage was within a twenty-four hour limit.

All of the tests were conducted with an insecticide made from a

*Address before Natl. Assn. of Insecticide & Disinfectant Mfrs., Chicago, June 8, 1937.

†Grateful acknowledgment is made of suggestions, comments, and advice from Professor George W. Snedecor, Director of the Statistical Laboratory, Iowa State College.

Test no.	Cage 1, 8/28 No. flies	No. dead	Percent dead	Cage 2, 8/28 No. flies	No. dead	Percent dead	Cage 1, 9/11 No. flies	No. dead	Percent dead	Cage 2, 9/11 No. flies	No. dead	Percent dead	Cage 1, 9/16 No. flies	No. dead	Percent dead
1	178	46	25.8	132	53	40.1	249	135	54.1	196	91	46.4	177	105	59.3
2	181	88	48.6	148	61	41.2	153	93	60.8	201	88	43.82	129	62	48.1
3	147	74	50.3	108	56	51.8	196	100	51.0	170	93	54.7	173	84	48.5
4	193	120	62.2	104	56	53.8	165	85	51.5	198	98	49.5	110	52	47.3
5	171	70	40.9	127	77	60.6	171	96	56.1	202	98	48.5	144	81	56.2
6	163	68	41.7	129	71	55.0	181	88	48.6	228	119	52.2	109	67	61.4
7	182	89	48.9	132	83	62.9	176	92	52.8	181	104	57.4	139	84	60.4
8	167	104	62.3	154	100	64.9	173	102	58.9	203	126	62.1	191	133	69.6
Sum	1382	659		1034	557		1464	791		1579	817		1172	668	
Cage Av'ge	47.68			53.86			54.03			51.74			56.99		
χ^2	70.575, 7 d.f.			29.507, 7 d.f.			8.300, 7 d.f.			20.216, 7 d.f.			27.900, 7 d.f.		
P	<0.01			<0.01			0.30			<0.01			<0.01		

Test no.	Cage 2, 9/16 No. flies	No. dead	Percent dead	Cage 1, 9/22 No. flies	No. dead	Percent dead	Cage 2, 9/22 No. flies	No. dead	Percent dead	Test border averages Totals flies	Totals dead	Percent dead
1	147	82	55.8	172	62	36.0	150	72	48.0	1401	646	46.11
2	142	81	57.0	210	86	40.9	139	77	55.4	1303	636	48.81
3	175	101	57.7	167	74	44.3	143	91	63.6	1279	673	52.62
4	179	111	62.0	208	97	46.6	204	109	53.4	1361	728	53.49
5	140	95	67.8	207	93	44.9	128	73	57.0	1290	683	52.94
6	215	134	62.3	186	94	50.5	135	86	63.7	1346	727	54.01
7	167	97	58.0	191	94	49.2	150	90	60.0	1318	733	55.61
8	147	87	59.2	177	78	44.1	142	87	61.2	1354	817	60.34
Sum	1312	788		1518	678		1191	685		10652	5643	
Cage Av'ge	60.06			44.66			57.51			52.97		
χ^2	6.673, 7 d.f.			10.902, 7 d.f.			12.724 , 7 d.f.			69.535, 7 d.f.		
P	0.47			0.15			0.10			<0.01		

For cage averages, $\chi^2 = 103.473$, 7 d.f., P = <0.01;

For the several cages, $\chi^2 = 183.173$, 56 d.f., P = <0.01

Table II. Percent mortalities of flies from tests of the Official Method with paper on the floor for eight tests.

properly diluted one to twenty pyrethrum extract; twelve milliliters of insecticide were sprayed into the testing chamber for each test, using the DeVilbiss atomizer No. 5004. Temperature and humidity were controlled within narrow limits. Air pressure on the atomizer was kept constant at twelve and one-half pounds. The manner of introducing flies into the testing cabinet was to simply walk into the cabinet, open the door of the rearing cage, and let a number (100-200) of the flies escape; the door of the rearing cage was then closed and while leaving the chamber, the experimenter waved a black cloth with a circular motion which effectively prevented any flies from following. The time of testing for each test was about twenty minutes, and the tests were run as closely together as possible. Food was removed from rearing cages during the period of testing; food was placed in all recovery cages immediately after a series of tests was complete, and recovery cages taken to the insectary where like conditions of temperature and humidity as in the testing room were maintained.

FROM this point of departure, one may turn to Table I in which are recorded per cent kills of six successive tests from a rearing cage of flies for eight successive cages under the standard conditions of the Peet-Grady method. Glancing through the per cent kills for each cage, it will be noticed that they seem very erratic and have a tendency to be low at the beginning of a series and high at the end. The average per cent kills for successive cages show considerable divergence.

Because of (statistically indicated) indefinite causes of variability in the individual cages, one can't say certainly whether the flies of the different cages were of different susceptibilities, whether the unknown factor was not constant in effect for different cages, or whether, as it is most likely, the cage border total average percentages are a combination of both the above possible causes. The tendency, noted in the individual cages, for per cent kills to be low at the beginning of a series and high at the end, is remarkably emphasized when the averages calculated for each successive test from a cage for the eight cages are noted in the test border total column of Table I.

One is immediately struck by the progressive average per cent kill in successive tests from a cage, leading one to suspect that there is some factor causing a progressive increase in mortalities from test to test. In casting about for an explanation of this phenomena, the possibility suggests itself that the cause of the increase in mortalities might have been due to a build-up of deposited insecticide on the floor of the testing cabinet for each test, even though after each test the floor, walls and ceiling of the death chamber were carefully wiped with a clean, dry cloth. In any event, the statistical analysis points to uncontrolled variation in tests made by this laboratory under the standard conditions of the Peet-Grady method; and leads to the method's rejection as a dependable means of comparing insecticide toxicities. The next series of tests was designed to test the hypothesis of insecticide accumulation on the floor of the testing chamber.

In Table II are recorded per cent kills of eight successive tests from a rearing cage of flies under the standard conditions of the Peet-Grady method with a modification suggested by the cooperative tests made in 1935-36. Two pieces of over-lapping paper* were used to cover the floor of the testing cabinet for each series of eight tests from a cage of flies. Tests were made in succession as closely together as possible, with the time for each test averaging eighteen or nineteen minutes. As one notes the per cent kills for each cage, it can be seen that the departures are similar to those in Table I, though perhaps to a less degree if account is made that the present series is of eight, and the former of six, tests; also, that the per cent kill with paper is closer to 50 per cent than without.

Again, a tendency to high kills may be noted in the latter tests from a cage. Considering the average mortalities for the successive cages, deviations are observed which necessitate conclusions identical with the results of Table I, that cage mortality differences are likely due to fluctuations in the unknown factors (statistically indicated) together with fly susceptibility changes. When the test border total averages are noted, it is seen that the tendency to an increase in kill from test to test in the individual cages once more makes emphatic reappearance. The progressive increase in mortalities from test to test, even though its character seems less with paper on the floor than without, is still evident.

It might be suggested that there is an accumulation of insecticide even with paper used on the floor of the testing chamber, but that it takes place to a less extent than on a linoleum surface. It is evident that these possibilities together with the statistical analysis pointing to uncontrolled sources of variation, properly disqualify the Peet-Grady modification with a piece of paper on the floor of the testing chamber for each series of eight tests as a dependable means of insecticide comparison. The next series of tests is designed to retest the theory of insecticide accumulation by means of using fresh paper on the floor of the testing cabinet with each test.

In Table III are recorded per cent kills of eight successive tests from a cage of flies under the standard conditions of the Peet-Grady method with the modification of using two clean pieces of overlapping paper on the floor of the testing cabinet for each test; strictly speaking, two overlapping papers were used for two tests, one side of the papers being used for one test, and the papers being turned over for a test on the clean side for the next test; the papers were discarded after being used on both sides and fresh pieces used for the next pair of tests; and so on. To make certain of no possible insecticide accumulation on the walls and ceiling of the test chamber, these

Table II. Percent mortalities of flies from tests of the Official Method with paper on the floor for eight tests.

*Forty inch wide gray wrapping paper. Geo. W. Millar & Co., N. Y.

Test no.	Cage 1, 10/23 No. flies	No. dead	Percent dead	Cage 2, 10/23 No. flies	No. dead	Percent dead	Cage 1, 10/27 No. flies	No. dead	Percent dead	Cage 1, 10/20 No. flies	No. dead	Percent dead	Cage 2, 10/29 No. flies	No. dead	Percent dead
1	168	80	47.6	241	69	28.6	120	70	58.3	133	56	42.1	134	54	40.3
2	186	79	42.4	274	113	41.2	131	63	48.1	111	43	38.7	134	76	56.7
3	220	123	55.9	210	76	36.2	113	47	41.6	124	56	45.1	138	66	47.8
4	193	92	47.6	239	87	36.4	147	80	54.4	144	91	63.1	179	90	50.2
5	230	134	58.2	152	55	36.2	108	51	47.2	193	119	61.6	163	91	55.8
6	243	111	45.6	171	80	46.8	132	67	50.7	170	101	59.4	152	68	44.7
7	187	87	46.5	133	53	39.8	160	85	53.1	152	76	50.0	134	68	50.7
8	278	135	48.5	142	64	45.1	129	84	65.1	170	113	66.4	140	79	56.4
Sum	1705	841		1562	597		1040	547		1197	655		1174	592	
Cage Av'ge	49.32			38.22			52.59			54.72			50.42		
χ^2	17.008, 7 d.f.			19.695, 7 d.f.			17.892, 7 d.f.			44.830, 7 d.f.			13.888, 7 d.f.		
P	0.01			<0.01			0.01			<0.01			0.05		

Test no.	Cage 1, 11/2 No. flies	No. dead	Percent dead	Cage 2, 11/2 No. flies	No. dead	Percent dead	Cage 1, 11/5 No. flies	No. dead	Percent dead	Test border averages Totals flies	Totals dead	Percent dead
1	162	80	49.4	114	64	56.1	145	83	57.2	1217	556	45.69
2	164	73	44.5	145	71	48.9	178	64	35.9	1323	482	43.99
3	166	69	41.5	169	91	53.8	188	83	44.1	1328	611	46.01
4	150	58	38.6	162	94	58.0	143	63	44.1	1357	655	48.27
5	118	42	35.6	144	79	54.8	158	71	44.9	1266	642	50.71
6	144	54	37.5	141	65	46.1	196	92	46.9	1349	638	47.29
7	136	68	50.0	131	52	47.3	172	93	54.0	1205	592	49.13
8	134	67	50.0	122	55	45.1	173	117	67.6	1288	714	55.43
Sum	1174	511		1128	581		1353	666		10333	4990	
Cage Av'ge	43.52			51.50			49.22			48.29		
χ^2	13.778, 7 d.f.			9.712, 7 d.f.			46.370, 7 d.f.			46.041, 7 d.f.		
P	0.05			0.20			<0.01			<0.01		

For cage averages, χ^2 = 133.320. 7 d.f., P = <0.01;

For the several cages, χ^2 = 183.173, 56 d.f., P = <0.01

Table III. Percent mortalities of flies from tests of the Official Method with paper changed after each test.

Table III. Percent mortalities of flies from tests of the Official Method with paper changed after each test.

were wiped with a cloth dampened with carbon tetrachloride after each test.

Upon study of the per cent kills for each cage, it is at once apparent that while there is an unreasonable amount of difference between tests, this is not particularly manifest in a tendency toward higher mortalities as the tests progress. (The statistical examination of the per cent kills for each test indicate some influence still causing more than expected differences.) Hence, when the average kills for each cage are examined, the differences call for a repetition of the conclusions of Tables I and II. On looking over the test border total average mortalities of successive tests from a cage, it is notable that the per cent kills are irregular, and with the exception of test eight, little suggestive of any progressive increase in per cent kill; and it might be considered that though the factor of insecticide accumulation has been entirely removed, there remains some other source or sources of variation.

At this stage of the inquiry into factors causing variations in Peet-Grady tests, the writer consulted with Professor George W. Snedecor, Director of the Statistical Laboratory of Iowa State College, the results being presented to him in Analysis of Variance[5] form. Professor Snedecor suggested the appropriate statistical examination for the data and urged that the search for the sources of variation be continued. Unpublished work by Drs. W. S. Abbott and F. L. Campbell in the U. S. Bureau of Entomology and Plant Quarantine, indicating a difference in susceptibilities of male and female flies, together with a review of the situation, gave rise to the following additional possible factors of variability: 1. The sex difference in susceptibilities of flies. 2. Flies might not be similar because of (a) insufficient replication of rearing conditions of battery jars with (b) consequent inadequate mixing of emerging flies into rearing cages. 3. Susceptibility changes might take place in a cage of flies due to their not being fed during the two and three quarter-hours period of testing. 4. The ten minute exposure period might be too long (that perhaps flies, after being knocked down in three minutes or so and lying on the floor of the testing cabinet in different positions — some on their backs, some on their sides — might receive the downward drift of the insecticide unevenly for the remainder of the ten minute exposure period, and so cause a variation in test to test mortalities). With these thoughts in mind, conditions of the method were altered as follows:

To examine the effects of sex, flies of both sexes were tested simultaneously as has been the custom; but at the time of counting, flies were sexed and per cent kills based on the separate mortalities of male and female flies. In order to further replicate rearing conditions and make it possible to better mix emerging flies, the rearing media containers were changed from battery jars to empty fourteen and one-half ounce condensed milk cans; for greater convenience, the rearing media was changed similar to one suggested by Richardson[6] consisting of wheat bran, alfalfa meal, powdered milk and yeast. A group of empty cans were filled with media and 150-175 fly eggs seeded into the media. They were then put aside until time for the flies' emergence at which time the cans were examined and the size of the pupae noted. Cans were disregarded where no flies had developed and the balance in which the pupae looked similar were distributed into the rearing cages; they were left there while the flies emerged over a two-day period.

In order to offset a possible increase in susceptibility of unfed flies, with the exception of two cages food was placed before flies all the while before testing. To get away from a downward drift of insecticide upon knocked down flies lying in different positions, the period of exposure was reduced from ten to four minutes, timed by a stop watch; and in order to balance a possible decrease in kill from the longer exposure period, the dosage of insecticide was increased from twelve milliliters to fifteen milliliters.

In other words, an attempt was made to obtain mortalities based within practical limits on only the insecticide striking flies or picked up by them in flight. It was necessary to abandon humidity control because the rapidity of testing prevented the humidity system from maintaining the testing room at the high relative humidity of sixty-five per cent. The pieces of paper were changed for each test as was done in tests of Table III. Also, for each test, every inch of the walls and ceiling of the chamber was wiped with a dry cloth; the carbon tetrachloride used for tests of Table III was considered unnecessary, besides its possible toxic effects upon the experimenter.

Being relevant to some of the later discussion, a further short description of the general testing conditions is given. The temperature ranged from 80° F. to 85° F. during the tests; the relative humidity ranged from 25 to 35 per cent; readings were taken after each test with a sling psychrometer. Flies were let loose in the testing chamber in the same manner as was done in tests of Tables I, II, and III. After the exposure period had ended, flies were immediately picked up using a suction flask and placed in a clean, dry recovery cage. The sex of flies still flying after ten minutes was noted; and the numbers added to those alive the next day. (In all cases per cent knockdowns were between 98 per cent and 100 per cent). The time of exhausting the insecticide from the chamber was about seven minutes. The flies tested in the morning (first cage of the test day) were taken to the insectary and small containers of milk soaked paper were placed in the recovery cages at noon. The flies tested in the afternoon (second cage of the test day) were taken to the insectary and nourishment, as above, placed in the

Table IV. Percent males of the flies used in tests of the Modified Method.

Test no.	Cage 1, 3/9 No. flies	No. males	Percent males	Cage 2, 3/9 No. flies	No. males	Percent males	Cage 1, 3/12 No. flies	No. males	Percent males	Cage 2, 3/12 No. flies	No. males	Percent males	Cage 1, 3/22 No. flies	No. males	Percent males
1	101	72	71.2	113	72	63.7	123	57	46.3	108	65	60.2	128	61	47.6
2	98	66	67.3	104	67	64.4	120	70	58.3	95	62	65.2	105	58	55.2
3	109	65	59.6	125	71	56.8	122	76	62.3	117	76	64.9	107	57	53.3
4	93	51	54.8	93	55	59.1	119	57	47.9	104	59	56.7	116	52	44.8
5	93	52	55.9	113	64	56.6	141	73	51.8	89	41	46.0	126	72	57.1
6	97	50	51.5	89	38	42.7	122	53	43.4	110	60	54.5	103	52	50.5
7	117	60	51.3	95	51	53.7	136	76	55.9	84	52	61.9	99	46	46.5
8	126	47	37.3	109	56	51.4	132	64	48.5	95	57	60.0	101	53	52.5
9	101	52	51.5	95	40	42.1	122	51	41.8	108	57	52.8	117	60	52.3
10	99	48	48.5	97	48	49.5	123	50	40.6	102	40	39.2	---	--	----
11	101	37	36.6	94	41	43.6	97	43	44.3	105	53	50.5	---	---	----
12	91	42	46.2	71	42	59.1	124	69	55.6	109	42	38.5	---	--	----
Sum	1226	642		1198	645		1481	739		1226	664		1002	511	
Cage Av'ge	52.36			53.84			49.90			54.16			51.00		
χ^2	49.922, 11 d.f.			26.448, 11 d.f.			26.105, 11 d.f.			38.311, 11 d.f.			8.538, 8 d.f.		
P	<0.01			<0.01			<0.01			<0.01			0.40		

Test no.	Cage 2, 3/22 No. flies	No. males	Percent males	Cage 1, 3/24 No. flies	No. males	Percent males	Cage 1, 4/7 No. flies	No. males	Percent males	Cage 2, 4/7 No. flies	No. males	Percent males	Test border averages Totals flies	Totals males	Percent males
1	116	77	66.3	132	71	53.8	122	49	40.2	109	57	52.3	1052	581	55.23
2	111	54	48.6	119	58	48.7	110	55	50.0	107	58	54.2	969	548	56.55
3	104	57	54.8	159	94	59.1	145	66	45.5	114	61	53.5	1102	623	56.53
4	93	63	67.7	131	83	63.3	128	54	42.2	99	54	54.5	976	528	54.10
5	89	48	53.9	120	61	50.8	106	36	33.9	124	48	38.7	1001	495	49.45
6	152	72	47.4	138	78	56.5	117	34	29.0	134	59	44.0	1062	496	46.70
7	114	52	45.6	139	74	53.2	126	54	42.8	119	59	49.6	1029	524	50.92
8	98	49	50.0	158	80	50.6	111	41	36.9	106	47	44.3	1036	494	47.68
9	115	44	38.3	105	48	45.7	125	44	35.2	137	55	40.1	1025	451	44.00
10	113	45	39.8	132	55	41.7	93	55	59.1	127	44	34.6	886	385	43.45
11	93	36	38.7	130	56	43.0	123	75	60.9	102	31	30.4	845	372	44.02
12	72	38	52.8	120	56	46.7	---	---	----	119	41	34.4	706	330	46.74
Sum	1270	635		1583	814		1306	563		1397	614		11689	5827	
Cage Av'ge	50.00			51.42			43.11			43.95			49.85		
X^2	43.034, 11 d.f.			24.667, 11 d.f.			46.651, 10 d.f.			36.544, 11 d.f.			105.743, 11 d.f.		
P	<0.01			<0.01			<0.01			<0.01			< 0.01		

For cage averages $\chi^2 =$ 461.909, 8 d.f., P = <0.01;

For the several cages, $\chi^2 =$ 214.923, 95 d.f., P = <0.01.

Table V. Unsexed percent mortalities of flies from tests of the Modified Method.

Test	Cage 1, 3/9 No. flies	No. dead	Percent dead	Cage 2, 3/9 No. flies	No. dead	Percent dead	Cage 1, 3/12 No. flies	No. dead	Percent dead	Cage 2. 3/12 No. flies	No. dead	Percent dead	Cage 1, 3/22 No. flies	No. dead	Percent dead
1	101	54	53.5	113	79	69.9	123	46	37.4	108	54	50.0	128	32	25.0
2	98	39	39.8	104	65	62.5	120	51	42.5	95	45	47.4	105	28	26.7
3	109	49	44.9	125	82	65.6	122	54	44.3	117	51	43.6	107	34	31.8
4	93	30	32.3	93	55	59.1	119	39	32.8	104	45	43.3	116	29	25.0
5	93	45	48.4	113	68	60.2	141	46	32.6	89	34	38.2	126	42	33.3
6	97	34	35.0	89	47	52.8	122	45	36.9	110	45	40.9	103	32	31.1
7	117	42	35.9	95	54	56.8	136	54	39.7	84	36	42.8	99	17	17.2
8	126	28	22.2	109	57	52.3	132	52	39.4	95	44	46.3	101	27	26.7
9	101	39	38.6	95	48	50.5	122	41	33.6	108	35	32.4	117	34	29.0
10	99	38	38.4	97	50	51.5	123	38	30.9	102	24	23.5	---	--	----
11	101	25	24.8	94	57	60.6	97	31	32.6	105	33	31.4	---	--	----
12	91	27	29.7	71	43	60.5	124	47	37.9	109	38	34.8	---	--	----
Sum	1226	450		1198	705		1481	544		1226	484		1002	275	
Cage Av'ge		36.70			58.85			36.73			39.48			27.44	
χ^2		42.013, 11 d.f.			17.217, 11 d.f.			11.704, 11 d.f.			28.286, 11 d.f.			10.071, 11 d.f.	
P		<0.01			0.10			0.40			<0.01			0.28	

Test no.	Cage 2, 3/22 No. flies	No. dead	Percent dead	Cage 1, 3/24 No. flies	No. dead	Percent dead	Cage 1, 4/7 No. flies	No. dead	Percent dead	Cage 2, 4/7 No. flies	No. dead	Percent dead	Test border averages Totals flies	Totals dead	Percent dead
1	116	44	37.9	132	25	26.5	122	42	34.4	109	46	42.2	1052	432	41.06
2	111	27	24.3	119	22	18.5	110	46	41.8	107	49	45.7	969	372	38.39
3	104	31	29.8	159	46	28.9	145	57	39.3	114	47	41.2	1102	451	40.93
4	93	37	39.7	131	38	29.0	128	47	36.7	99	37	37.4	976	357	36.58
5	89	32	35.9	120	27	22.5	106	24	22.6	124	47	37.9	1001	365	36.46
6	152	38	25.0	138	32	23.2	117	32	27.3	134	43	32.1	1062	348	32.77
7	114	29	25.4	139	28	20.1	126	38	30.2	119	44	37.0	1029	342	33.24
8	98	29	29.6	158	47	29.7	111	28	25.2	106	40	37.7	1036	352	33.98
9	115	29	25.2	105	23	21.9	125	37	29.6	137	44	32.1	1025	330	32.19
10	113	23	20.3	132	27	20.4	93	38	40.9	127	34	26.8	886	272	30.70
11	93	13	14.0	130	29	23.3	123	47	38.2	102	21	20.6	845	256	30.30
12	72	18	25.0	120	19	15.8	---	--	----	119	32	26.9	706	224	31.73
Sum	1270	350		1583	373		1306	436		1397	484		11689	4101	
Cage Av'ge		27.56			23.56			33.38			34.64			35.08	
X		36.653, 11 d.f.			17.957, 11 d.f.			22.266, 11 d.f.			28.756, 11 d.f.			67.307, 11 d.f.	
P		<0.01			0.08			0.01			<0.01			<0.01	

For cage averages, χ^2 = 65.129, 8 d.f., P = <0.01;

For the several cages, χ^2 = 300.220, 95 d.f., P = <0.01

Table. VI. Percent male mortalities of male flies from tests of the Modified Method.

Test	Cage 1, 3/9 No. males	No. dead	Percent dead	Cage 2, 3/9 No. males	No. dead	Percent dead	Cage 1, 3/12 No. males	No. dead	Percent dead	Cage 2, 3/12 No. males	No. dead	Percent dead	Cage 1, 3/22 No. males	No. dead	Percent dead
1	72	54	75.0	72	69	95.8	57	41	71.9	65	49	75.4	61	29	47.5
2	66	39	59.1	67	59	88.0	70	49	70.0	62	40	64.5	58	28	48.3
3	65	49	75.4	71	66	92.9	76	49	64.5	76	46	60.5	57	34	59.6
4	51	27	52.9	55	45	81.8	57	36	63.1	59	41	69.5	52	27	51.9
5	52	41	78.8	64	57	89.0	73	42	57.5	41	30	73.2	72	41	56.9
6	50	34	68.0	38	33	86.8	53	37	69.8	60	41	68.3	52	31	59.6
7	60	41	68.3	51	43	84.3	76	51	67.1	52	35	67.3	46	16	34.8
8	47	25	53.2	56	49	87.5	64	47	73.4	57	40	70.2	53	27	50.9
9	52	36	69.2	40	35	87.5	51	35	68.6	57	32	56.1	60	31	51.7
10	48	34	70.8	48	43	89.6	50	33	66.0	40	21	52.5	--	--	----
11	37	24	64.9	41	39	95.1	43	27	62.8	53	28	52.8	--	--	----
12	42	26	61.9	42	39	92.8	69	44	63.8	42	30	71.4	--	--	----
Sum	642	430		645	577		739	491		664	433		511	264	
Cage Av'ge	66.98			89.46			66.44			65.21			51.66		
χ^2	19.001, 11 d.f.			11.585, 11 d.f.			6.454, 11 d.f.			15.526, 11 d.f.			9.520, 11 d.f.		
P	0.06			0.40			0.85			0.18			0.60		

Test no.	Cage 2, 3/22 No. males	No. dead	Percent dead	Cage 1, 3/24 No. males	No. dead	Percent dead	Cage 1, 4/7 No. males	No. dead	Percent dead	Cage 2, 4/7 No. Males	No. dead	Percent dead	Test border averages Totals Males	Totals dead	Percent dead
1	77	43	55.8	71	35	49.2	49	36	73.4	57	40	70.2	581	396	68.16
2	54	24	44.4	58	21	36.2	55	44	80.0	58	44	75.8	548	348	63.50
3	57	30	52.6	94	46	48.9	66	51	77.3	61	42	68.9	623	413	66.29
4	63	37	58.7	83	38	45.8	54	45	83.3	54	33	61.1	528	329	62.31
5	48	30	62.5	61	24	39.3	36	22	61.1	48	39	81.2	495	326	65.86
6	72	36	50.0	78	29	37.1	34	25	73.5	59	38	64.4	496	304	61.29
7	52	27	51.9	74	28	37.8	54	36	66.7	59	40	67.8	524	317	60.50
8	49	27	55.1	80	42	52.5	41	27	65.8	47	32	68.1	494	316	63.97
9	44	23	52.3	48	23	47.9	44	33	75.0	55	35	63.6	451	283	62.75
10	45	22	48.9	55	24	43.6	55	37	67.3	44	29	65.9	385	243	63.12
11	36	11	30.6	56	27	48.2	75	47	62.7	31	19	61.3	372	222	59.68
12	38	16	42.1	56	16	28.6	--	--	----	41	29	70.7	330	200	60.61
Sum	635	326		814	353		563	403		614	420		5827	3697	
Cage Av'ge	51.34			43.37			71.58			68.40			63.45		
χ^2	13.444, 11 d.f.			14.801, 11 d.f.			13.649, 11 d.f.			8.557, 11 d.f.			15.831, 11 d.f.		
P	0.27			0.20			0.20			0.65			0.15		

For cage averages, χ^2 = 430.187, 8 d.f., P = <0.01;

For the several cages, χ^2 = 112.537, 95 d.f., P = 0.50

recovery cages about five o'clock. The temperature and humidity conditions of the insectary approximated those of the testing chamber. Counts of dead and living flies were made the following morning; that is, the dead flies were transferred to numbered dishes for sex examination and count, and the live flies killed and transferred to numbered dishes for subsequent sex examination and count. (It takes about three hours to sex and count flies from twenty-four tests.)

The flies used on 3/9 were three to four days old; flies from seven media cans were let emerge into each of the two rearing cages. Flies of the morning cage had not been fed previous to testing; those of the afternoon cage had been kept in the dark all morning and also had not been fed since the previous day.

The flies used on 3/12, morning cage, were six to seven days old and emerged from seven media cans. These emerged at the same time and from the same batch of media cans as the flies used on 3/9. Flies from seven cans were put in the afternoon cage; these, however, were somewhat smaller, emerged later than the flies used on 3/9 and the morning of 3/12, so that they were but four to five days old when tested. Flies of both cages were fed before testing and food, milk soaked paper, was placed in the rearing cages during the testing hours. Food was before flies while awaiting testing on all subsequent days.

The flies used on 3/22 were from a batch of pupae let grow and collected from the bottoms of ten rat cages. This was done in order to determine the effects of mixing flies from uncontrolled rearing conditions. A batch of flies emerged into the morning cage and after the first batch of flies had emerged, another batch from the same pupae were let into the afternoon cage. Hence, when tested, the morning cage of 3/22 consisted of six-day old flies and the afternoon cage of five-day old flies—but all from the same mixed batch of pupae.

The flies used on 3/24 were what emerged from a rather unsuccessful attempt (due to drying out of the rearing media) to rear flies in small flower pots instead of tin cans. The flies were rather small and five days old when tested. Twenty-five flower pots were put in the double-sized (1½ by 1½ by 2 ft.) rearing cage for emergence; but it is not known if flies emerged from all the pots. The double-sized rearing cage was used to prevent excessive crowding of flies.

The flies used on 4/7 were five to six days old, ten media cans being put into each rearing cage. The cans were assigned to the two cages at random. Again, double-sized rearing cages were used. After twelve tests, about 300 flies were left in the morning cage and about 700 flies left in the afternoon cage.

Because of the more rapid testing procedure, a greater number of tests may be made than in a corresponding time by the official Pect-Grady method. Therefore, in the next four tables are the results of twelve tests from a cage of flies, instead of eight. Along with the study of male and female mortalities considered separately, the sex ratio from test to test is investigated and also the total mortalities of flies as have been usually calculated.

IN Table IV are recorded the per cent male flies of the total number of flies used for each test in twelve successive tests from a rearing cage of flies over a period of nine cages. It can be seen that there is undue departure in the sex ratios from test to test for each cage; and in most instances, there is a marked majority of males in the first tests from a cage and of females in the latter. When the average ratios for the different cages are noted, it is apparent that while usually the ratio is nearly fifty-fifty as would be expected, now and then there is a wide disagreement. When attention is given to test border total averages, it is important to note the striking predominance of male flies in the first six tests from a cage taken as a whole and of females in the last six tests. As will be emphasized in the next paragraph, this factor has a direct influence upon the per cent mortalities without regard to sex as ordinarily calculated.

If the per cent kills without regard to sex are now examined in Table V, it may be noted that for each cage, there is considerable divergence between tests, with a tendency toward high kills for the first few tests, (the statistical analysis points to excessive differences for the tests as a whole). When the average mortalities for the different cages are noted, it can be seen that there is much discrepancy between them. When study is made of the variability in test border total averages, it is important to notice the very obvious high per cent kills of the first six tests from a cage when compared to the latter six tests. This corresponds, as one would think it likely, because of high male and low female susceptibilities, to the predominance of male flies in the first tests and of females in the last tests from a cage. In addition, one should mark that the present even decrease in test border kills is the exact opposite of what was seen in Tables I, II, and III. This may be considered as evidence that the present method has eliminated whatever factors caused the increases in kills of the former tests.

The per cent male flies dead of the total number of male flies used for each cage is recorded in Table VI. When one considers the per cent kills, it is plain that each series is uniform and consistent, with the exception of Cage I, 3/9. To cinch the situation, the statistical analysis indicates no difference other than are normal. The average male mortalities of the successive cages exhibit somewhat of a departure from each other. Since one is no longer baffled by unknown factors within the cages, these deviations will be discussed more fully later.

Emphasis should be placed upon the average per cent kills of test border totals, which are in striking contrast to those of unsexed flies.

Table VII. Percent female mortalities of female flies from tests of the Modified Method.

Test	Cage 1, 3/9 No. fmls	No. dead	Percent dead	Cage 2, 3/9 No. fmls	No. dead	Percent dead	Cage 1, 3/12 No. fmls	No. dead	Percent dead	Cage 2, 3/12 No. fmls	No. dead	Percent dead	Cage 1, 3/22 No. fmls	No. dead	Percent dead
1	29	0	0.0	41	10	24.4	66	5	7.6	43	5	11.6	67	3	4.5
2	32	0	0.0	37	6	16.2	50	2	4.0	33	5	15.2	47	0	0.0
3	44	0	0.0	54	16	29.6	46	5	10.8	41	5	12.2	50	0	0.0
4	42	3	7.1	38	10	26.3	62	3	4.8	45	4	8.9	64	2	3.1
5	41	4	7.8	49	11	22.4	68	4	5.9	48	4	8.3	54	1	1.8
6	47	0	0.0	51	14	27.4	69	8	11.6	50	4	8.0	51	1	1.9
7	57	1	1.8	44	11	25.0	60	3	5.0	32	1	3.1	53	1	1.8
8	79	3	3.8	53	8	15.1	68	5	7.3	38	4	10.5	48	0	0.0
9	49	3	6.1	55	13	23.6	71	6	8.4	51	3	5.9	57	3	5.3
10	51	4	7.8	49	7	14.3	73	5	6.8	62	3	4.8	--	--	---
11	64	1	1.6	53	18	34.0	54	4	7.4	52	5	9.6	--	--	---
12	49	1	2.0	29	4	13.8	55	3	5.4	67	8	11.9	--	--	---
Sum	584	20		553	128		742	53		562	51		491	11	
Cage av'ge	3.42			23.15			7.14			9.07			2.24		
χ^2	15.358, 11 d.f.			12.168, 11 d.f.			5.301, 11 d.f.			11.385, 11 d.f.			7.547, 11 d.f.		
P	0.18			0.30			0.90			0.25			0.50		

Test no.	Cage 2, 3/22 No. fmls	No. dead	Percent dead	Cage 1, 3/24 No. fmls	No. dead	Percent dead	Cage 1, 4/7 No. fmls	No. dead	Percent dead	Cage 2, 4/7 No. fmls	No. dead	Percent dead	Test border averages Totals fmls	Totals dead	Percent dead
1	39	1	2.6	61	0	0.0	73	6	8.2	52	6	11.5	471	36	7.64
2	57	3	5.3	61	1	1.6	55	2	3.6	49	5	10.2	421	24	5.70
3	47	1	2.1	65	0	0.0	79	6	7.6	53	5	9.4	479	38	7.93
4	30	0	0.0	48	0	0.0	74	2	2.7	45	4	8.9	448	28	6.25
5	41	2	4.9	59	3	5.1	70	2	2.8	76	8	10.5	506	39	7.71
6	80	2	2.5	60	3	5.0	83	7	8.4	75	5	6.7	566	44	7.77
7	62	2	3.2	65	0	0.0	72	2	2.8	60	4	6.7	505	25	4.95
8	49	2	4.1	78	5	6.4	70	1	1.4	59	8	13.6	542	36	6.64
9	71	6	8.4	57	0	0.0	81	4	4.9	82	9	11.0	574	47	8.19
10	68	1	1.5	77	3	3.9	38	1	2.6	83	5	6.0	501	29	5.79
11	57	2	3.5	74	2	2.7	48	0	0.0	71	2	2.8	473	34	7.19
12	34	2	5.9	64	3	4.7	--	-	----	78	3	3.8	376	24	6.38
Sum	635	24		769	20		743	33		783	64		5862	404	
Cage Av'ge	3.78			2.60			4.44			8.17			6.89		
X	8.277, 11 d.f.			17.009, 11 d.f.			12.986, 11 d.f.			10.475, 11 d.f.			9.342, 11 d.f.		
P	0.40			0.10			0.22			0.50			0.60		

For cage averages, χ^2 = 144.611, 8 d.f., P = < 0.01;

For the several cages, χ^2 = 100.506, 95 d.f., P = 0.50

Note: Averages in all tables are weighted averages.

	Number flies	Number dead	Percent dead		Number flies	Number dead	Percent dead
		Cage 1, 3/9				Cage 2, 3/9	
Males	642	430	66.96	Males	645	577	89.46
Females	584	20	3.42	Females	553	128	23.15
Average	1226	450	36.70	Average	1198	705	58.84
	χ^2 = 531.672, 1 d.f., P = 0.01				χ^2 = 540.599, 1 d.f., P = 0.01		
		Cage 1, 3/12				Cage 2, 3/12	
Males	739	491	66.44	Males	664	433	65.21
Females	742	53	7.14	Females	562	51	9.07
Average	1481	544	36.73	Average	1226	484	39.48
	χ^2 = 560.208, 1 d.f., P = 0.01				χ^2 = 401.449, 1 d.f., P = 0.01		
		Cage 1, 3/22				Cage 2, 3/22	
Males	511	264	51.66	Males	635	326	51.34
Females	491	11	2.24	Females	635	24	3.78
Average	1002	275	27.44	Average	1270	350	27.56
	χ^2 = 307.158, 1 d.f., P = 0.01				χ^2 = 359.718, 1 d.f., P = 0.01		
		Cage 1, 4/7				Cage 2, 4/7	
Males	563	403	71.58	Males	614	420	68.40
Females	743	33	4.44	Females	783	64	8.17
Average	1306	436	33.38	Average	1397	484	34.65
	χ^2 = 649.216, 1 d.f., P = 0.01				χ^2 = 551.365, 1 d.f., P = 0.01		
		Cage 1, 3/24					
Males	814	353	43.37				
Females	769	20	2.60				
Average	1583	373	23.56				
	χ^2 = 364.854, 1 d.f., P = 0.01						

Table VIII. Average percent male and female dead for cages and days.

The mortalities are evenly distributed, well balanced, and compared to those of unsexed flies, remarkable in their agreement. Notwithstanding the attainment of the desired uniformity, it should be pointed out that if the first test border average mortality is neglected, the kills would be even better grouped.

From other tests which have been made with more than 12 tests from a cage, it has been noticed that the first groups of male flies seem less resistant to an insecticide than the latter. It is thought that the first flies from a cage fly faster and are generally more active and hence pick up more insecticide than those later, thus giving rise to an almost imperceptible increase in mortality, or perhaps it is that the flies are not fed soon enough after being tested.

On the other hand, the last 200-300 flies from a cage are notably lethargic, do not fly about the cage much, and tend just to crawl along the walls or ceiling. It is thought that perhaps such action gives their vital breathing parts protection and hence causes an apparent resistance to the action of an insecticide. For the purpose of uniformity of results, it is advised not to test the last 200-300 flies in a cage (it is very difficult to scare them out of the rearing cage, anyway) but rather discard them.

THE per cent female flies dead of the total number of female flies used for each cage is recorded in Table VII. As with the per cent kills of male flies of individual cages, those for females for each cage are in harmony. Here, too, the statistical analysis indicates satisfactory uniformity. Since the averages for cages differ more than one might expect, these will be discussed along with the differences in male cage averages. Again, it is important to note the agreement of sexed flies' test border total average kills; for as well as the male averages being in accord, so are the females. The female mortalities are even more in agreement than the male and do not exhibit any suggestion of the differences discussed for male flies.

In Table VIII are recorded the average cage percentages of male and female dead for each day. Upon glancing over these, it is seen that on 3/9 there were decided differences in the separate male and female toxicities for both the morning and afternoon cages of flies. With the exception of the flies on 3/9, the per cent kills of flies on other days i
that the flies in the morning and afternoon of each day are of a similar susceptibility. Remembering that on 3/9 the flies were not fed previous to testing and that on other days food was present in the cages all of the while before testing, it is safe to conclude that a digestion factor has had some influence on fly susceptibility; apparently unfed flies are more susceptible than flies fully nourished. It is felt that since the flies of Tables I and II did not have food before them while they were being held previous to testing that perhaps this digestion factor causing an increase in susceptibility added itself to the build-up of insecticidal material factor, giving the progressive increase in per cent kill of test border total averages; also, the digestion factor may account for the decidedly high eighth test border total average mortality of Table III.

From the pairs of cage averages for each sex of days other than 3/9, it is evident that further work may disclose the fact that with proper attention to rearing technique, including randomization of emerging flies into rearing cages, batches of flies may be obtained that are uniform for one test day, in other words, the flies of a particular group of media cans when separated into two or more rearing cages are likely to be of a similar susceptibility on a particular day. It has not been established whether two or more such rearing cages tested on different days will maintain a like susceptibility, nor has it been established that flies of different ages are of a similar susceptibility, even though that age differences be but one or two days. The data here presented are not quite adequate for definite statements on these points.

Since the average mortalities for each day of the respective sexes are irregular, it may be concluded that rearing conditions have an influence upon the susceptibility of flies. However, it may be supposed that even under identical rearing conditions and with flies all of the same age, there will be some departure in susceptibility of flies from test day to test day, due to biological reasons.

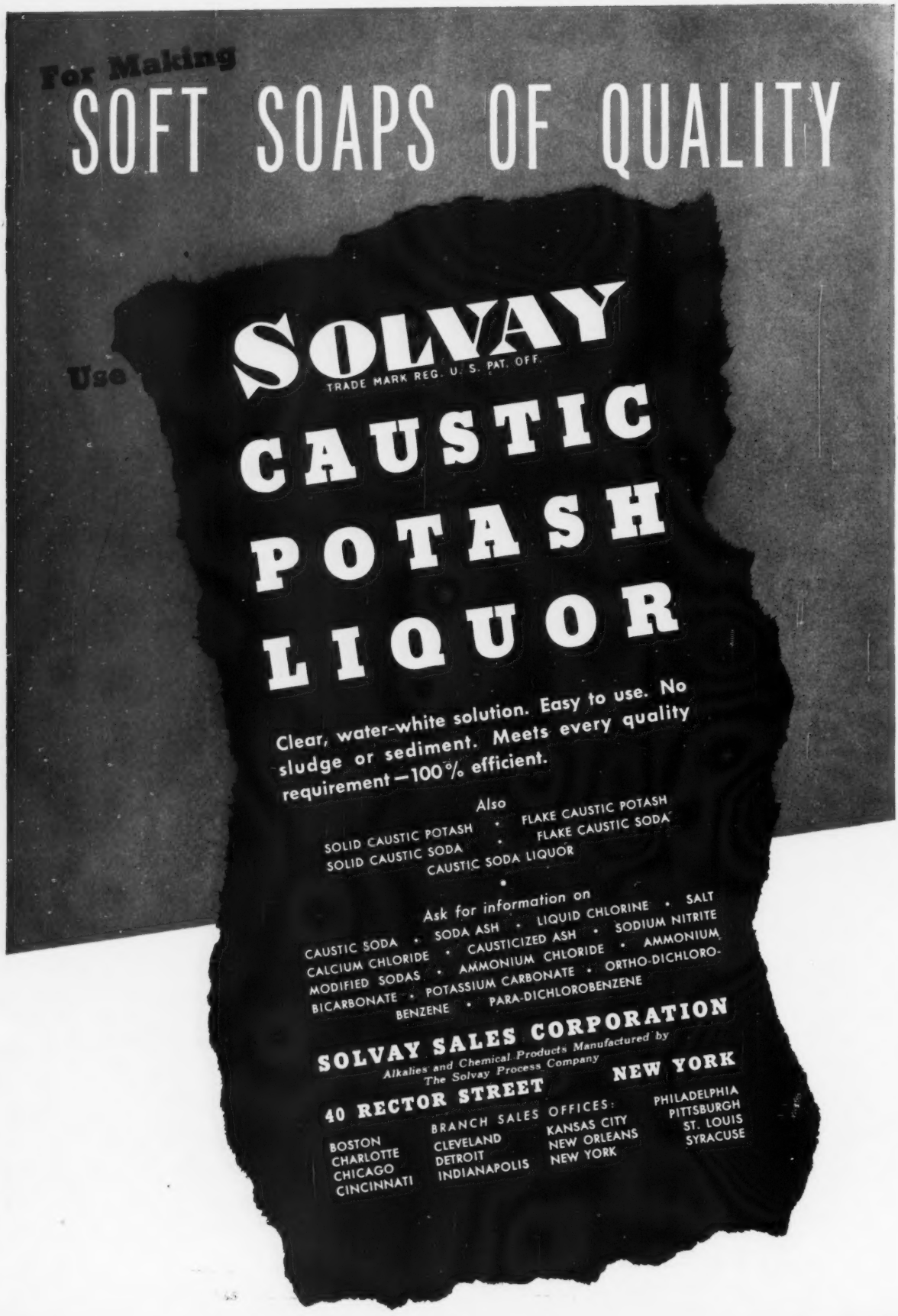
From Table IX, in which are compared the susceptibilities of male and female flies tested under identical conditions (cage average mortalities of male and female flies compared), there is no doubt to be had as to the authenticity of the susceptibility differences due to sex.

BECAUSE the data presented here have been the results of uniformity studies upon a series of samples of the same toxic value, designed with the view in mind of establishing a dependable means of insecticide comparison, it is felt desirable to make a few comments on the proper experimental design for the testing and comparison of different insecticides. It is possible to test any number of different samples up to and including twelve simultaneously. Where but a small number of samples are to be tested, two or three or four, the method outlined in the Official Method of Evaluating[7] is satisfactory. As suggested by Professor Snedecor, the samples should be tested successively in a series depending upon the number of samples, the samples being tested in a random order determined by shuffled numbered cards or in a random order of numbers tabled from such a mechanical procedure[8]. The series may be repeated as often as desired, depending upon the amount of accuracy one may wish to gain from the results—though in each new series the samples must be tested in a different random order.

Using this design, it will not matter if flies differ from cage to

	Percent male dead			Percent female dead		
	Number males	Number dead	Percent dead	Number females	Number dead	Percent dead
Cage 1, 3/9	642	436	66.98	584	20	3.42
Cage 2, 3/9	645	577	89.46	553	128	23.15
Day average	1327	1007	78.24	1137	148	13.02
Chi-square for cages	χ^2 = 101.384, 1 d.f., P = 0.01			χ^2 = 97.574, 1 d.f., P = 0.01		
Cage 1,3/12	739	491	66.44	742	53	7.14
Cage 2,3/12	664	433	65.21	562	51	9.07
Day average	1403	924	65.86	1304	104	7.97
Chi-square for cages	χ^2 = 0.235, 1 d.f., P = 0.65			χ^2 = 1.626, 1 d.f., P = 0.20		
Disregarding cages	χ^2 = 22.301, 23 d.f., P = 0.50			χ^2 = 19.217, 23 d.f., P = 0.70		
Cage 1,3/22	511	264	51.66	491	11	2.24
Cage 2,3/22	635	326	51.34	635	24	3.78
Day average	1146	590	51.48	1126	35	3.11
Chi-square for cages	χ^2 = 0.012, 1 d.f., P = 0.93			χ^2 = 2.178, 1 d.f., P = 0.15		
Disregarding cages	χ^2 = 22.975, 20 d.f., P = 0.30			χ^2 = 17.660, 20 d.f., P = 0.60		
Cage 1, 4/7	563	403	71.58	783	64	8.17
Cage 2, 4/7	614	420	68.40	743	33	4.44
Day average	1177	823	69.92	1526	97	6.36
Chi-square for cages	χ^2 = 1.410, 1 d.f., P = 0.24			χ^2 = 8.922, 1 d.f., P = 0.01		
Disregarding cages	χ^2 = 25.250, 22 d.f., P = 0.30			χ^2 = 31.388, 22 d.f., P = 0.10		

Table IX. Average percent dead of male and females for each cage.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cage or day to day; for such change in susceptibilities will be common to all samples. If five or six samples are to be examined simultaneously, they should be tested successively, in random order in each series of tests, with test border totals of cages or split cages of flies as the means of comparison. Hence, for five samples, two randomized series of five tests could be made with ten tests from one cage of flies; if ten tests per sample are desired, it would necessitate testing five cages of flies. For seven and more samples, it is suggested that enough flies be let emerge into a cage for a single series of tests. The randomized series could then be run on several cages, the number of cages tested depending upon the accuracy desired.

Again, test border totals would serve as the means of comparison. If tests are designed in this manner, the uniformity of reaction of flies to the several samples may be demonstrated with an appropriate statistical test[9], thus giving a desirable check on experimental technique. Whether samples are of different toxicities or not may then be indicated with either of two statistical tests[3], thus giving one the desired comparative evaluation of samples.

Toxicities in terms of per cent kills should be reported for male and female flies separately. If the Official Control Insecticide is used, the samples may be classified according to grades in per cent kills as can likely be set up arbitrarily on the basis of experimental evidence. Full confidence may be had in the above experimental design. Using it, different samples have been successfully tested and evaluated in this laboratory. The writer hopes soon to publish an account of these concrete examples.

Conclusions

1. Series of tests from the Official Peet-Grady method without paper on the floor of the testing cabinet, with paper for eight tests, and with clean paper for each test have been analyzed. Each procedure has been indicated of little value as a means of valid liquid insecticide evaluation.

2. A marked difference in the susceptibility of male and female flies has been established.

3. It has been shown that there is a definite relation between sex ratios and per cent mortalities of unsexed flies.

4. An increase in susceptibility to an insecticide of unfed flies has been demonstrated.

5. It has been indicated that rearing conditions bear a measure of relation to susceptibility.

6. It has been illustrated that if for any reason flies of different susceptibilities are mixed, little confidence can be placed upon results not taking cognizance of the differences; for, as in the case of sex, these susceptibility differences may not occur equally in all batches of flies tested and so bias resulting data.

7. A method of rearing flies has been outlined which enables one to easily replicate rearing conditions as well as easily obtain a representative group of flies from which uniform small batches may be used for testing.

8. Using the equipment of the Peet-Grady method, a faster, more economical testing procedure has been developed that takes into account the sex susceptibility and other factors of variation.

9. Experimental procedure has been given for testing and evaluating several samples simultaneously by the proposed method. Results obtained in such a manner may be stated in unqualified terms by the use of appropriate statistical tests of experimental method and sample differences.

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New Equipment in Fat Analysis

The ester fractionation method for the detailed analysis of the composition of natural fats has been considered limited in accuracy. A fractionating column has been devised to improve the method. The new column is 90 cm. in height, is packed with singleturn glass helices and electrically heated by means of a Nichrome wire wound on Pyrex tubing. A total reflux and adjustable rate of distillation enable maximum separation of ester mixtures. The separation of C_{16} from C_{18} saturated esters in beef tallow was accomplished with an intermediate fraction representing approximately 6 per cent of the total weight of these components. Butter fat liquid esters were separated as well as the beef tallow solid esters mentioned. The separation of adjacent members of the saturated esters series was more efficient than in the case of the unsaturated esters. Intermediate fractions in all cases represented a small percentage of the total distillate. Pure fatty acids were obtained on hydrolysis of appropriate ester fractions.

The occurrence of small amounts of palmitoleic and myristic acids in peanut oil was demonstrated. It is suggested that in other cases the iodine values of liquid ester fractions of lower molecular weight than C_{18} acids may be in part due to the similar presence of unsaturated acids lower than oleic. Herbert E. Longenecker. *J. Soc. Chem. Ind.* **56**, 199-202T (1937).

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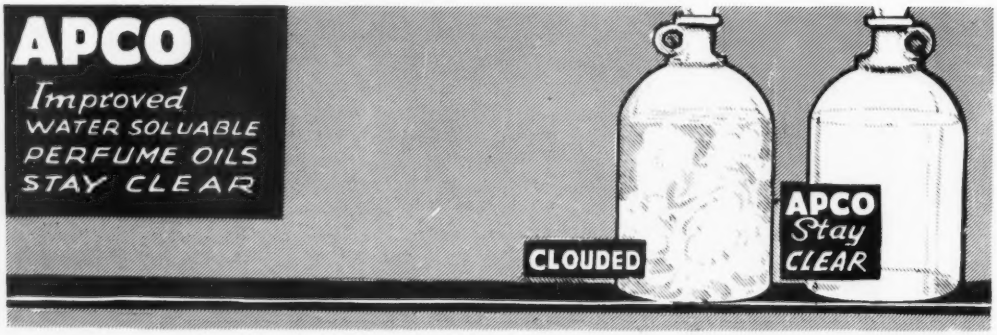

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Commercial Standards for HOUSEHOLD INSECTICIDES

By F. W. Reynolds*
National Bureau of Standards

A SIGNIFICANT change is coming over the methods of merchandising household goods. This change has been taking place over a period of several years, but within the last few months tremendous impetus has been gained. High schools and colleges are giving courses in household buying. Clubs to study methods of selecting household purchases have been formed. The type of women's club that once studied Browning, now studies Buying. Semi-technical organizations issue bulletins that purport to tell the housewife how to make a dollar go farther, and have attracted large numbers of clients.

Naturally when such a movement develops, there is danger that much of the result may become destructive rather than constructive. This is a direct challenge to the leaders of industry, to those of experience and accomplishment in business fields, to those who are responsible for vast investments of capital and organization. The challenge is to lend their influence to direct the movement along constructive lines.

The retailers, who occupy the front line trenches in the contact with customers, have taken steps to meet this challenge. As this manuscript was being prepared, a copy of the May 17th issue of the periodical. *Retailing* came over my desk. That issue deals at length with informative labeling of merchandise. Although emphasis is placed on dry goods items, the principles it establishes should be of interest to manufacturers of all packaged goods and of all commodities sold at retail. Customers are demanding information on the quality and performance characteristics of the things they buy. If the sales people cannot give that information, the customer may refuse to buy. If he is misled by over zealous salesmanship into expecting the preposterous, the store is likely to receive irritating and costly complaints. Retailers are asking manufacturers to label their products with accurate information as to the quality and performance characteristics of the merchandise.

The periodical just mentioned tells of a survey made covering a group of representative department stores over the country. A questionnaire asked a direct question to ascertain if the store gave preference to goods labeled as to quality by the manufacturer. Ninety-seven per cent of the replies said such preference was given; some went so far as to express a preference even at a higher price. Retailers are not sentimentalists. Their preference is based on what they believe to be good business principles. Their opinion deserves the attention of manufacturers.

From now on commercial standards will be mentioned occasionally. Perhaps a definition of the term as it is used here should be given, in order that we may understand each other fully.

About ten years ago the National Bureau of Standards responded to a demand for an agency to provide a neutral meeting ground where producers, distributors, and consumers of manufactured goods could reach a mutually satisfactory agreement on definitions of quality and on grading rules for commodities. The Division of Trade Standards was organized. Through a simple and flexible procedure, specifications, methods of test, and grading rules can be agreed upon in open forum and then published as commercial standards. We call them "recorded standards of the industry" because they are purely industry standards. The National Bureau of Standards dictates none of the requirements nor does it compel adherence. Commercial standards have been established for some sixty commodities and others are in process of establishment. Several have been revised to meet changing conditions in the industry; fuel oils, for example, is going into its fourth edition. Some examples of the subjects now covered are "Stoddard" solvent, wall paper, feldspar, mirrors, wood shingles, wool and part-wool blankets, marking of gold filled and rolled gold plate articles other than watch cases, domestic burners for Pennsylvania anthracite, binders board, mohair pile fabrics, mattresses for hospitals and institutions, and woven dress fabrics.

Objectives

The procedure and application of commercial standards are ordinarily so flexible that no matter what the objective, the specification can usually be adjusted toward the ultimate goal desired. A few

*Address before Natl. Assn. of Insecticide & Disinfectant Mfrs., Chicago, June 7, 1937.

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common objectives will be considered briefly.

TO promote fair competition and stabilize production and the price structure. Standardization of quality tends toward a more firm and equitable price level. In that connection let me quote from a Supreme Court Decision (No. 268 of the October term, 1935):

> * * * "And cooperative endeavor may appropriately have wider objectives than merely the removal of evils which are infractions of positive law. Nor does the fact that the correction of abuses may tend to stabilize a business, or to produce fairer price levels, require that abuses should go uncorrected or that an effort to correct them should for that reason alone be stamped as an unreasonable restraint of trade." * * *

A second objective is to raise the quality level of merchandise and to maintain that high standard of quality. Left to uncontrolled competitive forces, the general trend of quality is downward as sellers strive to underbid their competitors. Cotton broadcloth for men's shirts is an outstanding example. At one time cotton broadcloth meant a fine quality, high count fabric. Today, a so-called broadcloth shirt can be found advertised for 59 cents. No longer does the term "broadcloth" mean anything as a quality definition. The textile industry is so varied in its scope that it could absorb this calamity. The situation is different where single-product industries are concerned. There maintenance of quality and resultant consumer approval are necessary to the life of the industry. Let us hear the story of wood shingles.

Back in 1930 the shingle industry was in a bad way and getting worse. At that time there was no uniformity in grading and some of the lowest grades had the highest sounding designations. Even architects and contractors were often unable to specify a grade of shingle that they could recommend to their clients. The shingle industry was rapidly losing its business to other types of roofing materials. The Red Cedar Shingle Bureau of Seattle, Washington, approached our division and requested the establishment of a commercial standard for one grade—the highest possible to produce—all clear, all edge grain, all heartwood, designated No. 1 grade. A uniform label was adopted which included the following statement:

> These shingles are guaranteed by the manufacturer, inspected for—certified by Red Cedar Shingle Bureau to meet all the quality requirements of Commercial Standard C. S. 31-31 for Red Cedar Shingles as issued by U. S. Department of Commerce.

Mills began to concentrate on that grade. Instead of working to produce as many shingles as possible from a log, they began to produce as many No. 1's as possible—because the demand for that grade began to soar upward. During the period at which construction was at its lowest ebb, the shingle industry experienced a healthful growth. Now let me quote from a letter written six years later, dated March 15, 1937, by the Manager of the Red Cedar Shingle Bureau in reply to an inquiry from a group that was contemplating the establishment of a commercial standard. This letter was not addressed to us but a copy was courteously placed in our hands. The letter says in part:

> * * * "The magnificent cooperation of the Bureau of Standards has had a tremendously beneficial result on our industry. * * * This has not only been beneficial to our own members but has meant a great deal to the purchasers of building material. All of our shingles now are inspected and graded under their Commercial Standards, and there is not a lumber dealer in the entire United States that would not tell you that he, as an individual, and his trade as such, has benefitted by the cooperation that the Bureau of Standards has given to the Red Cedar Shingle Bureau.
>
> "I cannot speak too enthusiastically on this subject."

Time does not permit further discussion of the purposes of commercial standards. Perhaps the most frequent may be incorporated under the one heading of better understanding and better relationship between sellers and buyers.

Objections

NOW let us consider the objections to standardization of quality. A frequent objection comes from manufacturers of established trade brands. This is what they say. "I have spent money and years of effort to establish my brand and to build up a business. Now if I adopt a label stating that my product is standard, the same as is manufactured by some small and little-known firms, what becomes of my prestige? The fellow who has not built up a business and has no goodwill will cash in at my expense. Sometimes he can undersell me and take my business." That is the argument.

The fact of experience is, *it just doesn't work out that way*. No instance of the adoption of standard quality labels having caused a shift away from established brands has been reported to us. Why? I don't know of anyone having analyzed this subject. We can make surmises, however, based on general observation and on well known principles of selling. In the first place, if a label talks quality with conviction and force, the purchaser becomes "quality conscious." Desire for quality merchandise becomes uppermost in his mind. Slight differences in price are overshadowed by the assurance of dependability. Naturally, in this frame of mind the customer turns to well-known brands, and to those who through effective advertising and fair dealing have established a place in his hall of fame.

Someone else has stated a similar thought conversely, thus: "If the customer sees only a price tag she can scarcely be blamed if she compares prices only." The moral to this: If you have quality to sell, talk quality. Talk it so loudly and in so many different languages that the man who has only price to talk can't be heard. You can talk quality effectively in the language of trade brands and good-will, and in the language

(*Turn to Page* 113)

PYREFUME

THE PERFECTED PYRETHRUM CONCENTRATE

SUPER 20 · SUPER 30

a Penick Product

Makers of Liquid Pyrethrum Insecticides recognize the dependability of a superior *PYRETHRUM EXTRACT.* Just as in every branch of manufacture where a product is accepted as the standard by which other brands are compared, so can *PYREFUME* well be chosen for this unique distinction—both here and abroad.

A perfected process of manufacture assures clarity and stability of the concentrated extract. Precise laboratory control guarantees the standardized pyrethrins content. These facts explain in a few words why *PYREFUME* is a preferred product.

A list of those using Pyrefume as the pyrethrum base for their insecticide reads like a "Who's Who" of the industry.

We are equally equipped to supply *ROTENONE* products in accord with present day specifications—powdered DERRIS ROOT, powdered CUBE ROOT, ROTENONE, C.P. and technical.

S. B. PENICK & COMPANY

132 NASSAU STREET, NEW YORK, N. Y. 1228 W. KINZIE STREET, CHICAGO, ILL.

The World's Largest Botanical Drug House

The Termite Menace

A frank criticism of control methods and the recommendations of writers on the subject.

By M. G. Jorgenson
President, Structural Pest Control Board
State of California

THE termite question continues to be nearly front page news and writers contribute articles setting forth their pet theories concerning the proper method of control. The experienced operator is reaching the point of open rebellion because of some of the statements being made by such writers regarding termite shields, ground treatments, impregnation of wood without cleaning up debris under structures and underestimation of damage to buildings. Most of the contributors are obviously sincere in their statements, but the statements are based on theory, not practical experience.

Now, theory is fine for a basis to work from, but utterly useless for a basis to work on. Some of the articles printed show much study and thought, but in every instance, the man who makes his living actually performing termite control and repair is almost overcome with a feeling of chagrin and alarm when he considers the thousands of dollars that is going to be wasted by property owners through practice based on the theory set forth in many of these articles.

It should be permissible to say that the exceptions taken by the writer are based on facts learned in actual control work in not a few isolated cases set aside for study, but the every day run of the mill repair and treatment involving something over two thousand jobs. In addition, consensus of over two hundred other operators with a grand total of over 50,000 jobs done in the last ten years in California. In terms of history experience certainly such volume, can not be denied or taken lightly by anyone, regardless of academic training or laboratory theories.

In the April issue of *Soap* this year, a very able writer has written on Subterranean termites without mention of Dry Wood termites in such a way that the layman would suppose that he was covering the entire termite question. This is misleading to the property owner and would lead to no end of complications should it ever be necessary for an exterminator to explain to an owner that there are termites that do not live in the soil and which can attack any structure at any height. These same dry wood termites in certain sections of the United States constitute 75 per cent of the infestation.

The article in question quotes Dr. Snyder's emphasized statement that "There is no occasion for exaggerated fears" etc., which holds good in any contingency, whether it be a ship wreck or a hospital fire, but if the intent of the statement is to lead anyone to believe that there is no basis for alarm over termite infestation, the statement should be corrected, because that is not true. Further along the author infers that serious damage to buildings is rare. This is misleading, for in the Southwestern part of the United States the really serious damage constitutes about half the jobs done. In support of this statement, it can be said that in the area mentioned, it is impossible to get a loan on real estate that includes buildings until a "Termite Report and Damage Estimate" has been submitted to the loaning agency. Furthermore, over 60 per cent of the loan inspections reveal "serious" structural damage due to termites and fungi.

The same article recommends the calling in of a competent architect or contractor. With due respect to both of the professions, the average competent architect or contractor is not a competent termite operator, any more than the average physician is a competent dentist even though he knows the rudimentary principles of dentistry.

Reference is also made to trapping and the use of poison baits in termite control, both so far removed from practical endeavor that the true operator cannot believe his eyes as he reads. Another statement that the most practical, successful method and permanent control for thirty-five years has been the exclusion of termites by proper construction methods. To date the only thing built that is termite proof is 100 per cent steel and concrete, even then being sure that all cellulose debris has been removed from under the structure and being certain that no form boards are covered up in the concrete pour as well as eliminating the use of wooden spreaders in concrete forms.

Contrary to the statement by the same author, Subterranean termites do enter buildings through

doors and windows particularly when they are in a basement under area. and they do enter structures between clapboards very often, and even farther than that, they enter buildings very often between the stucco and sheathing.

In June issue of *Soap* statements made by Milford H. Oakes show a much greater appreciation of the qualifications needed to be a termite operator. He does, however, err in falling in line with many theorists as to the use of termite shields. This subject of termite shields is being given altogether too much credence. It is impossible to insulate a building against subterranean termites, or any other type of termites for that matter, with metal shields by inserting a continuous metal sheet between the mud sill and foundation of the building or the post footings and posts. Termites do and will build tubing around and over the edge of shields that are placed in a structure. In fact, it is believed by many operators that the added anchorage of a piece of metal extending out from a foundation is a great help to the termite in dealing with his engineering problems of high tube construction. The accompanying photo, hundreds of which could be submitted, tells more at a glance than a whole volume of argument could regarding the utter folly of the claim made for shields. There are literally thousands of cases where tubing comes directly from the soil to the girder, joist or subfloor without the support of foundation wall or post, assuming what might be termed a stalagmite formation. Metal shields can not and never will do any more good than good concrete in the way of termite protection when ordinary buildings are erected.

It is the writer's belief that the shield claims are so fantastic and impractical that if something is not done to curb the propaganda along this line, the termite exterminating industry will spend many years in living down a reputation for either ignorance of subject or insincerity for monetary gain.

Insecticide Standards

(*From Page* 109)

of advertising, and when you talk to the customer by means of quality labels he hears you at the time the deal is being closed.

Another objection. Many fear that unscrupulous sellers of poor merchandise will seize upon a government-promulgated standard of quality as a means for passing off low quality goods as conforming to the standard. They overlook the fact that such manufacturers are no doubt already using every questionable means of selling that is available. The commercial standard provides one method that the unscrupulous *can't* use, and get away with. The few cases of fraudulent use of a commercial standard in labeling have been dealt with effectively by the industries concerned. Labels containing reference to a definite standard of quality are enforcible as a part of the sales contract directly through the courts; or by the U. S. Federal Trade Commission under its authority to act in the public interest in matters involving unfair competition in interstate commerce.

Conclusion

To sum up the foregoing: For decades manufacturers have been using methods of test, such as the Peet-Grady test, to improve and maintain the quality of their product. Customers are asking for information. Retailers look to the manufacturers for help. By utilizing the methods of test that have been helpful to you, interpreted by publicly announced standards of quality, you can furnish this information. In doing this you help to guide the purchasing habits of the public along constructive lines and, incidentally, it's good business.

Household Cleansers

(*From Page* 23)

a high foam is desirable with the minimum amount of water present to prevent the wetting of the fabric to as great an extent as possible, use straight coconut oil soap powders in most cases". This is certainly useful advice to bear in mind when experimenting in the composition of such preparations, for there are still too many of them that exert an undesirable wetting action on rug or fabric to be cleaned.

A characteristic rug cleaning soap of the liquid type may thus be based on an aqueous solution of coconut oil soap, to which is added a fair quantity of liquid ammonia. Potassium carbonate is also incorporated in certain cases and is quite useful on account of its mildly alkaline and detergent properties.

An alternative type of rug cleaning soap has been proposed, consisting of approximately 20 per cent of triethanolamine oleate formed *in situ*, about 5 to 8 per cent of ethylene dichloride (an excellent cleaning fluid), 65 parts of water, and the balance isopropyl alcohol. This is added to water in equal parts, to give an emulsion that is used to sponge down rugs, upholstery and similar fabrics.

Glove soaps are a steady-selling specialty in the United Kingdom and particularly on the Continent. They range in constitution from a curd soap containing colloidal clay, bentonite, kieselguhr or orris root powder down to an ammoniated soap paste. A characteristic formula reads approximately as follows:—curd soap 55 per cent, water 35 per cent, kieselguhr 6 per cent, colloidal clay or bentonite 3 per cent, lavender 1 per cent.

Activated Carbon

(*From Page* 27)

dry rendering, and open kettle rendering. In some cases, particularly in the wet rendering process, the activated carbon is added to the fats before rendering and thus has an opportunity to accomplish its work during the actual rendering operation. The proportion used depends upon the type of fats being used and will vary from 0.1 per cent to 0.5 per cent, based on the weight of the raw fats. On sweet pickle fats, the reduction in odor and color is remarkable.

The system most commonly employed, and that undoubtedly en-

tailing less difficulty to the refiner, is the application in the clay kettle as previously described. In this case the rendered lard is pumped to the clay kettle and the actual treatment is then carried on the same as generally described for oils and fats.

Tallow and grease are also quite amenable to improvement with activated carbon. In the case of these fats, the carbon is used in conjunction with clay or fullers earth by the method described under clay kettle operation. Proportions of clay and carbon must quite often be increased due to the fact that the colors present in these products are relatively high. Proportions of clay may vary from 1 to 5 per cent and carbon from 1/10 to ½ per cent.

Glycerine

THE purpose of activated carbon in the manufacture of glycerine is to accomplish removal of color and odor, the primary purpose being decolorization. However, in some cases due to exceptionally favorable operating conditions and equipment, it is possible to produce a fairly light colored glycerine without the use of activated carbon. Under such conditions, activated carbon is employed for the prime purpose of correcting off-odors and only incidentally so far as color removal is concerned.

In the treatment of glycerine proportions of carbon will vary from 0.1 per cent to sometimes as high as 0.5 per cent. The glycerine is heated to a temperature of 175 to 195° F., at which time the carbon is added, the mixture agitated thoroughly for 15 to 30 minutes, and finally filtered. Diatomaceous earth is quite often used for precoating the filter cloths and occasionally along with the carbon to aid in the filtration operation.

In the treatment of products in the oil and fat industry, the selection of the proper quality of activated carbon should receive very careful consideration. The plant superintendent must realize that activated carbons accomplish more than just decolorization. Improvement of quality standards of flavor, odor and stability are obtainable with the proper carbon, and these factors should be considered of utmost importance when selecting the carbon to be used. Therefore, if the decolorizing ability of carbons are equal, that carbon which will improve the standards of the oil in other respects should receive first consideration. In correlating laboratory results to actual plant operation, it should also be remembered that laboratory results are only ½ to 1/3 as efficient as those obtained in the plant. In other words, only ½ to 1/3 the quantity used in laboratory work is necessary for accomplishing the same results in the plant.

Hypochlorite Claims

(From Page 87)

the product does not destroy all odors or kill all germs. The respondent stipulates it will not represent that the product "cleanses all it touches"; that disease germs cannot live in the presence of "Oxol", unless the specific germs "Oxol" is known to kill are named, and that the product's bacteria-destroying properties are stronger than carbolic acid, unless such representation is established by competent evidence.

From a practical point of view these stipulations are probably of slight significance to the companies concerned. Essentially the same points can be presented to the housewife in phraseology differing from that originally used but which will mean just as much to her. The Klor-O-Wash stipulation, which may be more representative of the many stipulations signed, than the other two quoted, is of real importance in that it aids both the manufacturer and the housewife. It aids the former in protecting himself against improper use of his product, and the latter in assuring her of the expected results. The majority of the claims deal with facts,—and facts can be determined by scientific experiment. Once the facts have been established, there should be little question as to what can be claimed and what not claimed.

New NAIDM Insecticide Com.

W. B. Eddy, president of the National Association of Insecticide & Disinfectant Manufacturers, has announced two new and revamped committees to work on insecticide problems for the association. The subcommittee on crawling insects will be discontinued, as this work is now being carried on by the association fellow at Ohio State University under the supervision of the Insecticide Specification Standardization Committee. Membership of the two new committees is made up as follows:

Insecticide Committee General
(Sales Problems)

Chairman: H. A. Thomas, Shell Petroleum Corp., St. Louis; Dr. Alfred Weed, John Powell & Co., New York; Wallace Thomas, Gulf Oil Corp., Pittsburgh; Robert C. White, Jr., Robert C. White Co., Philadelphia; E. G. Rude, Rex Research Corp., Toledo; Charles F. Opitz, John Opitz Inc., Long Island City, N. Y.; W. J. Zick, Stanco Inc., New York; Earl Ament, Dethol Manufacturing Co., Washington, D. C.; Preston B. Heller, B. Heller & Co., Chicago; E. F. McCanney, Sinclair Refining Co., East Chicago, Ind. and G. A. McLaughlin, McLaughlin, Gormley King Co., Minneapolis.

Specification Standardization Committee
(Scientific Problems)

Chairman: Dr. Alfred Weed, John Powell & Co., New York; H. A. Thomas, Shell Petroleum Corp., St. Louis; Hugh R. Berry, Shell Petroleum Corp., St. Louis; D. F. Murphy, Rohm & Haas Inc., Philadelphia; C. A. Murray, Baldwin Laboratories Inc., Saegertown, Pa.; Talbot J. Albert, Black Flag Co., Baltimore; Dr. A. E. Badertscher, McCormick & Co., Baltimore; Dr. W. A. Simanton, Gulf Oil Corp., Pittsburgh; F. C. Nelson, Stanco Inc., Elizabeth, N. J.; Dr. F. L. Campbell, Associate Professor of Entomology, Ohio State University, Columbus, Ohio; N. J. Gothard, Sinclair Refining Co., East Chicago, Ind.; J. E. Armstrong, Rex

Research Corp., Chicago; Dr. L. A. Hawkins, Bureau Entomology & Plant Quarantine, Dept. of Agriculture, Washington, D. C.; Dr. H. E. Whitmire, Thorocide Chemical Corp., St. Louis; W. F. Kroneman, Sherwood Petroleum Corp., Brooklyn; S. D. Benedict, Midway Chemical Co., Chicago and R. B. Stoddard, R. J. Prentiss & Co., N. Y.

Offer Rotary Sifter

B. F. Gump Co., Chicago, has just introduced a new rotary motion sifting unit, the "Bar-Nun" sifter. Designed principally for sifting and rebolting flour and other powders, these units can also be used to advantage for scalping, grading and separating many kinds of dry and granulated materials.

Extracting Fatty Oils

In extracting fats and fatty oils from vegetable seeds or kernels, the seeds are comminuted in the presence of a solvent or solvent vapor and simultaneously or subsequently, the fat is extracted. Seeds such as linseed and rape seed are fed through a hopper to grinding mills or grooved rollers submerged in the solvent, which may be benzine or carbon tetrachloride, etc. The ground material is then fed into a horizontal chamber containing solvent through which it passes by a screw conveyor into a second comminuting stage and then to a second extracting chamber. The mass may then be pressed between smooth rollers to express the oil and solvent. The extract is distilled with steam to recover the oil. Gesellschaft zur Verwertung Fauth'scher Patente m.b.H. British Patent No. 459,763; through *Chem. Abs.*

Trade Marks Granted

(*From Page* 47)

348,299. Dry Cleaning Compounds. R. R. Street & Co., Chicago. Filed March 19, 1937. Serial No. 390,284. Published May 11, 1937. Class 4.

348,321. Wax and Polish. Derris, Inc., New York. Filed April 2, 1937. Serial No. 390,843. Published May 11, 1937. Class 16.

The Hotel Market for Sanitation Products

AN analysis of the market for sale of sanitation products in the hotel and restaurant field has just been issued by Ahrens Publishing Co., New York, based on a series of consumer questionnaire surveys in this field. According to this report there are 153,468 units in the restaurant field, of which approximately 40,000 are lunch counters and refreshment stands, with the balance being restaurants, cafeterias and lunch rooms. In the hotel group there are 28,822 units, of which 7,378 are described as being hotels of 50 rooms or over.*

The market for sanitation products in these two groups is estimated as follows in the Ahrens survey:

Ammonia	Gals.	90,000
Brooms	$	850,000
Brushes	$	420,000
Carpet Sweepers	$	465,000
Chamois	$	55,000
Cleaning Compounds	$	7,210,000
Dishwashing Compounds	$	1,900,000
Disinfectants	Gals.	950,000
Furniture Polish	Quarts	600,000
Floor Wax	Lbs.	110,000
Insecticides	Gals.	1,300,000
Liquid Soap	$	280,000
Metal Polish	$	1,350,000
Mop Sets	$	200,000
Paper Towels	Sheets	200,000,000
Powdered Soap	$	195,000
Pails	$	135,000
Soap (Guest Room)	Pcs.	600,000,000
Soap (Laundry)	Lbs.	250,000
Sponges	Pcs.	65,000
Silver Polish	Jars	1,200,000
Toilet Tissue	$	575,000
Vacuum Cleaners	$	940,000

According to the survey, the buyer of sanitation products in hotels and restaurants is interested in products which:

1. Save time in cleaning.
2. Are easy to use.
3. Serve several purposes.
4. Are inexpensive to use.
5. Are easy to store.
6. Do not harm surfaces.
7. Do not carry offensive odors.
8. Can be purchased on short notice.
9. Are packed in convenient size containers.
10. That do not stain.

In selling sanitation products to this group, it is suggested that a separate institutional sales department be set up. This department should be in charge of one man who may be selected from the existing sales staff or who may have worked as a junior executive in a hotel or restaurant. The report emphasizes that products for this market must be properly packed, substantially manufactured and reasonably priced. Adequate distribution through jobber contacts must be established before attempting to reach the trade through advertising and direct selling.

Copies of the complete report may be obtained through the publishers of SOAP by subscribers.

* The 269-room Hotel McCurdy, "A Typical American Hotel," purchased $3,335.00 worth of sanitation equipment and supplies in 1936.

Testing Soap Wrappers

The usual tests of soap wrapping paper by placing it between freshly cut surfaces of soap, or of spotting it with drops of caustic solution, cannot be reduced to a numerical expression. The contact test is slow and does not give uniform results due to differences in the amount of moisture present and in the degree of sweating. The drop test varies with the degree of sizing and thickness of the paper and is too drastic when solutions containing up to 4 per cent of caustic soda are allowed to dry on the surface, since soaps carry such small percentages of free caustic, when it is present.

The actual impurities in paper which becomes stained by soap have not been completely identified, but among them are carboxyllic cellodextrin and lignin. The impurities causing staining are soluble in water. There are indications that some form of tannin is present.

A quantitative test is as follows: Extract 3 grams of paper which has been cut into small pieces, by boiling with two 50-cc. portions of water. Wash the sample and dilute the united extracts and washings to 100 cc. Add 25 cc. of *N* sodium carbonate solution, let stand for 5 minutes and filter. To 50 cc. of potassium bichromate solution containing 0.25 gram per liter, add 0.1 cc. of a 1 per cent solution of Congo red. Place 0.2, 0.5 and 1.0 cc. of this solution in each of 3 Nessler tubes and dilute each to 50 cc. Compare 50 cc. of the sample extract with the standards and state the result as the quantity of Congo red required to match the extract, expressed in cc.

Papers requiring more than 3 cc. have given a marked stain with 1 per cent caustic soda solution in the drop test. Tests on sized papers show that removal of the size with methyl alcohol makes little difference in the case of moderately sized papers, but very hard sized paper gave higher bichromate-Congo red values after removal of size. It was concluded that rosin size has little or no effect on the stainnig of soap wrappers. Low figures have usually been obtained on vegetable parchments. Waxed papers give trouble unless the wax is first extracted in a Soxhlet. In one instance, fair results were obtained by removing the wax by chilling the decoction before filtering.

Bichromate was found best for comparison because it is stable and similar in tint to the treated extract. No red dye has been found that is not slowly destroyed by it, so that it is necessary to add the dye at the time of making the test. T. Linsey Crossley. *Canadian Chem. & Met.* **21,** 213 (1937).

Novel Merchandising Plan Gets Speedy Distribution For Specialty Item

A BRIEF outline of his concern's complete sales program for "Savogran Wallpaper Remover," a new product in the household specialty field, is reported by C. H. Frankenberg, sales promotion manager of Savogran Co., Boston, Mass., in the June 10th issue of *Printer's Ink*. That the plan worked remarkably well for this particular product is indicated by the fact that national jobber distribution was obtained within sixty days. The material was originally introduced in England about a year ago, and it was observing the large sales there that Savogran Co. made arrangements for exclusive manufacturing and sales rights in United States. The methods used in introducing the new product to the American market should be of interest to every concern having a similar merchandising problem. Mr. Frankenberg reports on the sales plan as follows:

The novelty of the product and its many advantages were unquestionably helpful in introducing it in United States, but we did not rely on these in getting distribution and sales started. First, of course, we gave the product thorough tests to prove its advantages. Then we arranged for the designing and production of packages. We ordered only one size of package—a folding box to contain one ounce of material, as this amount is enough for an average room and a room-size package would help the customer estimate his requirements. The packages were printed in green and black.

The logical outlets for a wallpaper remover are paint, wallpaper, hardware and department stores.

As our other products were already distributed through wholesalers in these fields, we did not consider it necessary to undertake any new marketing research. We told our salesmen about the new product, asked them to spread the news about it to their customers and tell them that more information would reach them a little later.

We also wanted to acquaint wallpaper manufacturers with the product; perhaps they might have direct influence on sales. The easier and less expensive it is to remove old wallpaper, the more likely a home owner would be to have his home re-papered. Also, by making removal easier, the less likelihood there would be that new wallpaper would be put on over several layers of old paper, with the resulting chance of peeling off or other disappointing results. As soon as the cartons were completed and production started, we sent a package of the remover to all wallpaper manufacturers with a letter explaining its advantages.

A few days later, we announced the product to our regular list of customers and prospects and to an additional list of wallpaper wholesalers by means of a letter offering a regular size package as a sample. A catalog page in color describing the product was enclosed with the letter.

We had already placed a small advertisement in trade papers. This appeared in February, reaching dealers and jobbers a few days after our letter. The advertisements also offered a sample and as a result of these announcements we were swamped with requests for samples. Orders, too, began to come in.

As the new product had considerable news value because of its novelty, we released news publicity and cuts to trade publications and to general consumer magazines of the "home" type. The trade items included an offer of a free sample. These releases were printed by two-thirds of the trade publications and by 42 per cent of the general magazines.

Hundreds of dealers, paperhangers and painters wrote in requesting samples. Home owners visited dealers to buy the product, thus creating a demand on jobbers by these dealers. Others wrote in for information about it and asked for the name of the nearest source of supply. All inquiries were answered promptly and we notified those jobbers or dealers by sending a "Sales Tip" postcard—a double card, half of which notifies of the inquiry, the other half for the jobber's or dealer's use in following up.

During all this preliminary campaign our salesmen were busy among jobbers, turning over dealer orders that had arrived by mail and gradually getting a stock of the remover into the hands of wholesalers. Orders began coming in so thick and fast that we were running behind on production, making customers wait from one to three weeks while we made shipments on a "first come—first served" basis. We believed this was a temporary rush, while jobbers were stocking the item, but when we began to receive repeat orders within ten days after first shipment, we decided the product was really selling. We then installed additional packaging machinery and took in new factory employees in an attempt to keep from losing ground in our race to fill orders.

Naturally we followed up the sample packages we had sent to dealers, paperhangers and painters and received a good volume of interesting reports. Dealers reorted unusually good sales—as high as 105 packages in one day. Best of all,

Coming!

Here are a few of the titles of feature articles which are scheduled to appear during the next few months in SOAP—

- ★ **"Today's Trend in Soap Perfuming."**
- ★ **"Who's Buying Insecticides?"**
- ★ **"Laundry Soaps,—Meeting Modern Standards."**
- ★ **"Floor Waxes,—What Future?"**
- ★ **"Liquid Shampoo Manufacture."**
- ★ **"Your New Product,—What Should It Be?"**
- ★ **"Cleaners for White Shoes."**
- ★ **"Sweeping Compounds."**
- ★ **"Educating the Disinfectant User."**

and numerous other titles of far-reaching interest.

Watch your subscription renewal! We are now operating under new and stricter A.B.C. subscription rules. Do not miss any issues,—send in your renewal check promptly. Avoid missing the interesting and valuable series of articles which is coming,—plus the usual news, markets, technical abstracts, trademark registrations, contracts awarded for soap, sanitary products, etc. in every issue of SOAP. Send in your subscription promptly when you receive a renewal notice.

Mac Nair-Dorland Company, Inc.
Publishers
254 West 31st Street New York

dealers told us their customers came back for more.

For purpose of dealer display two dozen packages were packed in a green and black display carton. A supply of two-color consumer leaflets describing the product was packed in each display carton. These leaflets were also supplied to jobbers and dealers for mailings to customers. Electros for use in listing the product in jobbers' catalogs and catalog pages for jobbers' salesmen were also offered.

The next step in the merchandising plan was a broadside, lithographed in two colors, which was sent as a follow-up to our entire list of jobbers. This was titled "Success Story" and presented the story of the remarkable demand for the remover. The bleed cover was a photograph of several packages of the product arranged diagonally and printed in black with the title "Success Story" cut in in red. On the inside we showed a bleed photograph of the covers of magazines in which editorial announcements of the product had been published with a superimposed solid red circle listing the total circulation of these publications. The third page, headed "Accepted—by our Customers and Your Customers' Customers," featured testimonials from dealers, painters, paperhangers and home owners, and described the exclusive advantages of the product. This broadside pulled a good response from jobbers who had not previously ordered.

"Savogran Wallpaper Remover" was first announced to the trade on January 26, 1937. Within three weeks, we had received orders exhausting our estimated six months' production. By March 26 — two months later — representative and adequate stocks were carried by jobbers in thirty-eight States — from Maine to California and from the Canadian border to the Gulf of Mexico. We have no way of knowing how many dealers ordered a stock, but we believe dealer distribution through these jobbers included the majority of the other ten States.

This was more than "warehouse" distribution, for we were gratified at the repeat orders that kept coming in from jobbers. One jobber ordered in respectable quantities six times within five weeks. Another ordered five times in twenty-three days. The majority re-ordered at least once within the two-month period.

We are going to keep after jobbers and dealers through our salesmen and by direct mail. Due to the demand from customers for a larger size package, we are also making preparations for a four-ounce size. And to help dealers and jobbers increase their sales, and to keep "Savogran Wallpaper Remover" turning over for them, we are starting a consumer advertising campaign in national magazines.

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New Soap Raw Material

Sulfite waste liquor from the preparation of cellulose has been treated to give a powder suitable for use in soap making. The product consists of technical sodium lignin sulfonate. Since it possesses detergent properties in itself, it makes a valuable addition to soap. The powder is practically anhydrous and has been purified to free it of calcium, iron and acid, so as not to interfere with the action of soap. The powder is pale yellow in color but turns brown when moist. It is therefore best to use it with dry soap preparations, such as soap powder, flakes, toilet soap, etc. Used with these, it does not cause them to become colored, except when it is present in high concentration, when it would cause a yellowish tint. If added to soap containing a large amount of water, it would change the color to yellow to brown. Because of the harmful effect of moisture, the product has to be kept in air-tight containers during storage. Once colored, it cannot be bleached without losing its desirable properties as a detergent.

Soap chips are prepared in the usual way and powdered. A simple washing powder may contain 20 per cent of powdered soap, 40 per cent of sodium lignin sulfonate and 40 per cent of calcined soda ash Perborate can also be used in combination with the new material, as in a washing powder containing 20 per cent of pure powdered soap, 40 per cent of sodium lignin sulfonate, 30 per cent of calcined soda and 10 per cent of sodium perborate. The presence of the sulfonate does not decrease the activity of the perborate on storage.

When incorporated in soap, the latter should be dried to a fatty acid content of 84 per cent if a white product is desired. The sulfonate should be mixed with 3-4 per cent of a superfatting agent such as wool fat, paraffin oil, etc. and then mixed into the soap. These precautions are not necessary if a light brown soap is not objectionable. Soap made with the sulfonate gives a very soft foam of great stability. Robert Krings. *Seifensieder-Ztg.* **64,** 337-8 (1937).

♦

Color Reactions of Oils

The following color reactions were obtained in five minutes by adding 4-5 cc. of Carr and Price's reagent to 1-2 cc. of oil: Cottonseed oil, dark red-brown; olive oil, light green; sesame oil, very light pink-yellow; peanut oil, very light pink; colza oil, blue-green; rapeseed, very light green; poppyseed, yellow; apricot, very light sky blue with slight opalescence; sunflower, brown-yellow (turbid); grapeseed, green-brown (turbid); corn oil, yellow; soybean oil, violet-gray with slight opalescence; raw linseed oil, green (turbid); boiled linseed oil, black-green (turbid); sweet-almond oil, violet-blue with slight opalescence. Rancid colza oil reacts similarly to cottonseed oil. Rancid olive oil behaves differently from the neutral, and the chloroform solution of antimony trichloride can be used to detect rancidity by development of a visible opalescence. The reagent identifies cottonseed oil in nonrancid oils. Fosco Provvedi. Olii minerali, olii e grassi, colori vernici **16,** 103-4; through *Chem. Abs.*

TECHNICAL NOTES

Disinfecting in Dishwashing

The addition of sodium hexametaphosphate to detergent mixtures aids in the removal of bacteria from glassware and dishes. Hot water under practical routine conditions provides satisfactory destruction of bacteria on dishes and silverware. Wash waters should be maintained at 140°F. and rinse water at not less than 170°F. Chemical disinfection should be recommended only when hot water is not available. For cold water disinfection, only chlorine sterilizers should be used, or comparable compounds that can be readily checked by simple chemical tests. All glassware and silverware should be checked routinely by bacteriological examinations. W. L. Mallmann. *Am. J. Pub. Health* **27,** 464-70 (1937).

Bottle Washing

In washing bottles it is important to destroy bacteria, molds, etc. This depends on the method of cleaning. It has been found that a detergent solution containing 1.8 per cent of free caustic soda will destroy bacteria, yeasts and molds when the temperature of cleaning is at least 120°F. and when the time of contact of the solution with the bottles is at least 5 minutes. C. M. Moore. *Milk Plant Monthly* **26,** No. 5, 36-9, 50 (1937).

Loss of Pyrethrins

An apparent fall in the pyrethrin I plus II content in pyrethrum flowers, as determined chemically, takes place during 4 months of storage. This effect is due to oxidation of accompanying unsaturated acids and to diminished solubility of pyrethrins in light petroleum. After 20 months of storage about 45 per cent of the insecticidal activity is lost in the dried flowers, and somewhat less in pyrethrum powder. F. Kirigin. *Arhiv Hem. Farm.* **10,** 12-20; through *Chem. Abs.*

Household Insecticide

A product for the destruction of flies, mosquitoes, moths, ants, mice, rats and microbes is composed of allyl isothiocyanate mixed with carbon tetrachloride, and if desired, an essential oil or camphor oil. Hans Haag. French Patent No. 805,530; through *Chem. Abs.*

Carnation Perfume

The following are suggested as carnation perfumes for 100 kilograms of soap:

		grams
1.	Isoeugenol	240
	Ionone	90
	Terpineol	90
	Cananga oil	60
	Bromstyrol	24
	Cinnamic aldehyde	24
	Geranium oil, Bourbon	24
	Hydratropa aldehyde	24
	Benzyl isoeugenol	12
	Musk xylol	12

		grams
2.	Isoeugenol	200
	Eugenol	90
	Clove oil	60
	Hydrocinnamic alcohol	60
	Neroli 338 (Agfa)	60
	Cinnamic alcohol synth.	60
	Benzoin Siam, 50%	60
	Styrax liq.	30
	Ylang Ylang II	30
	Citronellol	30

H. M. Dumont. *Soap, Perfumery and Cosmetics* **10,** 506 (1937).

Water-Softening Processes

In lime-soda and similar precipitation water-softening plants, the settling of precipitated matter is speeded up by the application of electromotive forces of an order lower than would produce actual electrolytic effects. This is accomplished by passing the water and precipitating agent through a tube filled with shavings of two metals or alloys which are sufficiently far apart in the electromotive series to produce a feeble electric current, such as brass shavings and those of an aluminum alloy. Water possessing a total hardness of 27.3° was passed through the pipe, mixed with lime-soda, at the rate of 20 cubic meters per hour. The water was then passed through a gravel filter and had a hardness of 0.6°. *Chem. Trade J. & Chem. Engineer* **100,** 521 (1937).

Rotenone Content of Plants

Derris root from Singapore contained 6-7 per cent of rotenone; coarse roots, 3.6-5.7 per cent; roots from India, 3.1-4.5 per cent; and those from Indo-China, 3-4 per cent. Cube originates from various species of *Lonchocarpus*. Cube and timbo contain a minimum of 3.5 per cent of rotenone. J. Chevalier and Michel Chevalier. *Bull. sci. pharmacol.* **44,** 223-41 (1937); through *Chem. Abs.*

Rat Poison

Halogen derivatives of polyhydric alcohols, for example, the monochlorohydrin of glycerine, are used as poisons for rodents. I. G. Farbenind. A.-G. French Patent No. 805,557; through *Chem. Abs.*

Aid Fruit Spray Research

Governor Lehman of New York State has approved the Pease bill appropriating $10,000 to the New York State College of Agriculture at Cornell University for the investigation and study of the development of a non-poisonous spray for fruit-bearing trees.

Schwarz Celebrates 25 Years

Samuel Schwarz, president of Polak & Schwarz, Ltd., perfuming materials, Zaandam, Holland, celebrated his twenty-fifth anniversary with the firm on July 1. The New York offices of the firm are located at 667 Washington St.

Glycerine Recovery

The purity of glycerine is dependent on the composition of the original glycerides from which it is made, the method by which the glycerine is liberated, and the purification methods used on the crude glycerine. For soap-making purposes, the commercial fats and oils receive most of their purification in the kettle. The lyes therefore carry to the glycerine refinery various nitrogenous materials and the products of any oxidation or fermentation which the fats may have undergone.

The following illustrates the differences in the qualities of crude glycerine due to different percentages of raw materials:

	I	II	III
Gross acetin value (as glycerine)	82.54	79.18	56.47
Nonvolatile organic matter	1.16	3.45	14.55
Acetylizable value of nonvolatile organic matter	0.59	0.76	1.13
Ash	8.28	9.68	19.66
Alkalinity of ash (as Na_2O)	0.08	1.44	5.15

The plant which made crude glycerine I used coconut oil and a good grade of tallow. The second evidently used poorer stocks. Crude glycerine III was made from a highly acid stock which yields excellent soap but very impure glycerine lye.

Olive oil foots yield lyes that are so impure that they cannot be concentrated to 80 per cent. Hardened soybean oil yields lye containing only 0.16 per cent of nonvolatile organic matter, as compared with 0.85 per cent for both crude coconut oil and raw palm oil, and 1.07 per cent for tallow.

Too high a distillation temperature is destructive of the quality of glycerine. Certain types of crude glycerine can be distilled separately with success but foam tremendously if distilled together. Crudes are usually distilled on the alkaline side, but some distil much better when slightly acid. Occasionally batches of distilled glycerine will appear on the market which are unusual in their behavior. One lot of such glycerine probably had been made from lyes of cottonseed soap stock. A portion of this had been distilled seven times without material improvement in color. It was dark red by transmitted light and green by reflected light. A modified adsorption was worked out in this case, after which one distillation produced a satisfactory color. Arthur Guillaudeu. *Ind. Eng. Chem.* **29,** 729-33 (1937).

Diene Number

In the absence of the lower fatty acids, in the iodimetric determination of diene number, the excess of maleic anhydride is determined as soon as the reaction is completed, in the presence of the water-insoluble addition product and accompanying substances. Maleic anhydride in contact with water gives free maleic acid which reacts with potassium iodide-potassium iodate. If an excess of sodium thiosulfate is added the reaction is quantitative. Thus 10 cc. of 0.1 *N* maleic anhydride in acetone treated in a pressure flask with 50 cc. of water, 15 cc. each of 4 per cent potassium iodate and 24 per cent potassium iodide, and 25 cc. of 0.1 *N* sodium thiosulfate is allowed to stand for 2 hours. It is then treated with 25 cc. of 0.1 *N* iodine and titrated back with sodium thiosulfate. This method gave results which agreed excellently with those obtained by the alkalimetric method.

To determine the diene number of a fat, 0.1-0.15 gram of the sample in a glass capsule is sealed with 10 cc. of a standardized solution of maleic anhydride containing 9.8016 grams per liter in benzene and heated 20 hours at 100°C. The contents are then washed with 20 cc. of benzene and 20-30 cc. of water into a 250 cc. flask with a ground-glass stopper and titrated as above. Or the sample is refluxed for 15 hours in a 250 cc. flask with 10 cc. of the solution of maleic anhydride in toluene, the condenser is washed down with 20 cc. each of toluene and water, and the excess of maleic anhydride is titrated.

It has been found that many fats have diene numbers while there are some oils with diene numbers practically zero, as shown by the following list: Merck triolein 1, palm kernel oil 0, peanut oil 4.8-5.3, crude rapeseed oil 11.8-12.3, crude cottonseed oil 4.7-5.0, freshly extracted soybean oil 9.9-10.3, crude soybean oil 8.5-8.9, crude linseed oil 7.4-7.7.

The free acids of fats which have diene numbers but contain no known acids with conjugated systems show no diene numbers when isolated from the fats. Either the unsaponifiable portion is responsible for the diene numbers or the diene fatty acids are altered in the saponification process. It is concluded that many fats contain unsaturated very labile substances which are as yet unknown. H. P. Kaufmann, J. Baltes and H. Buter. Ber. **70B,** 903-11 (1937); through *Chem. Abs.*

Spectra of Fatty Acids

The absorption spectra of some fats change on saponification with cautic potash. This change was studied after refluxing various fats with alcoholic potassium hydroxide for 1 minute and for 24 hours, and separating the mixed fatty acids. Under these conditions the absorption of vegetable oils increased with the degree of unsaturation. The absorption maxima were at about 230 mu. The fatty acids from fats of land animals differed from those from vegetable fats in having part or all of their potential absorption developed in the natural state. The same absorption maxima were found. Fatty acids from marine oils showed absorption maxima at about 270 mu. Saturated acids and oleic acid do not show increased absorption. The absorption properties of the acids of tung oil are exceptional in that the oil shows intense absorption, with a sharp maximum at about 270 mu, even before saponification. Thomas Moore. *Biochem. J.* **31,** 138-41 (1937).

The effect of refluxing linseed oil with potassium hydroxide was first to raise the absorption at 230 mu, and later to develop absorption at 270 mu. The latter coincided with the formation of a solid unsaturated acid which was readily separated by crystallization. Ibid. 141-8.

NEWS . . . . . .

"Ant Stakes" Insecticide

Chemurgic Corp., Richmond, Calif., has recently introduced a new insecticide called "Ant Stakes." The product consists of a hollow stake filled with insecticide jelly and is inaccessible to anything larger than an ant. The ants enter the core of the stake, eat the jelly and die.

Masco Chemical Moves

Masco Chemical Co., manufacturer of floor waxes and specialties, announces the removal of its office and factory to new and larger quarters at 257-263 Duke St., Kearny, N. J. Offices will also be maintained at 570 Smith Street, Brooklyn.

Wax Assn. Meeting Postponed

A meeting of the newly formed Floor Wax Manufacturers Association, which was to have been held in New York during July for the election of officers, was postponed until fall. The next meeting of the group will be held in September, and permanent officers will then be named. The date of the September meeting will be announced at a later date by J. E. Stevens, 381 4th Ave., New York, who is serving as secretary for the group.

Midland Chemical Sales Meeting

The annual sales convention of representatives of Midland Chemical Laboratories, Dubuque, Iowa, was held at the home offices, July 1, 2 and 3, with sales representatives and their wives from all over the country in attendance. W. E. Klosterman, one of the leading salesmen of the company, directed each day's program, with J. C. Camm, sales manager, acting as general chairman. A trip through the large Midland plant, covering six acres of ground, was a special feature of the program to acquaint salesmen with new factory facilities which have been provided this year. A number of social features were also provided, with the whole group being the guests of L. O. Hillyard, president of Midland Chemical Laboratories, at a banquet on the evening of July 2. Prizes were presented at the banquet to salesmen who had earned them as awards for special achievements during the past year.

$1,000,000 for Pest Control

The appropriation committee of the U. S. Senate has just approved a joint resolution previously passed by the House, providing an appropriation of $1,000,000 for control of insect pests. In its report on the bill the house appropriations committee indicated that the money was for the purchase of poisoned bait in areas where outbreaks of insect pests are most likely to occur. The fund would be administered by the Department of Agriculture and would remain available until June 30, 1938.

Restrain Claims on "101" Fluid

Gardiner Manufacturing Co., 160 Van Rensselaer St., Buffalo, selling a washing fluid designated "101", has signed a U. S. Federal Trade Commission stipulation agreeing to discontinue representing that its product is a sterilizer and kills germs; that it causes ivy and oak poisoning to disappear and will heal eczema and open sores, and that it deodorizes and disinfects, unless in connection with this latter claim users are directed to first thoroughly cleanse the surface to be deodorized or disinfected.

Discuss Mosquito Extermination

Dr. Joseph M. Ginsberg of the N. J. Agricultural Experiment Station addressed members of the New Jersey Mosquito Extermination Association at a recent meeting in Atlantic City, N. J., giving as his estimate that a total of 3,000,000 gallons of mosquito larvaecide will be used during the current year in combatting mosquito breeding. He estimated that this gallonage would be capable of killing 2,613,600,000 potential mosquitos, rising from 60,000 acres of breeding waters.

"Fly Tox" Ads Stress Comfort

The current advertising campaign behind "Fly Tox" insecticide, product of Rex Research Corp., Toledo, stresses the comfort that can be secured through elimination of insect annoyance. This is in contrast to the emphasis on danger and disease, resulting from insects, that has featured previous advertising campaigns. "Fly Tox" schedules are currently running in 300 daily newspapers.

Lawrence Bros. Move

Lawrence Bros., San Francisco, exterminators and manufacturers of sanitary supplies, moved recently from 344 Sixth St. to 104 Clay St.

Moth Damage Detection

A booklet entitled "How To Detect Moth Damage" has just been issued by Daniel H. Jones, mothproofing consultant, 328 Chestnut St., Philadelphia. It advises on how to distinguish moth damage in fabrics from cuts, burns, worn spots, crushes, rotted fabric, etc. Copies are available at $1.00 each, which in view of the meagre size of the booklet, only 12 pages, seems rather exorbitant.

Bevernick, Jr. with Prentiss

Richard A. Bevernick has just joined the sales organization of R. J. Prentiss & Co., New York, insecticide raw materials. He is the son of A. W. Bevernick, western sales representative for the Prentiss firm. After an apprenticeship in the mills, Richard Bevernick will engage in sales work. He has just been graduated from the U. S. Naval Academy, resigning from the Navy Department to join R. J. Prentiss & Co.

Introduce New Disinfectant

A new disinfectant has recently been introduced in England by Wright, Layman & Umney, Ltd., under the name "Sylvozone".

Two Benders Arrive

One a boy weighing nine pounds and the other a girl weighing a pound less,—in fact, twins, were born to Mr. and Mrs. J. H. Bender on about June 29 at Williamsport, Pa. The reason they were born in Williamsport is because Mr. and Mrs. Bender live there, Mr. Bender being none other than the well-known secretary-treasurer of the Clarkson Chemical Co. of that city, manufacturers and distributors of sanitary supplies and chemical specialties. The young man, and also his twin sister, are reported to be doing very nicely. To celebrate the arrival of the twins, it is reported from Williamsport that Mr. Bender bought a new Cadillac to be used to convey them in and about Williamsport.

Barnes Joins Wilson & Bennett

J. R. Barnes, for many years associated with Valentine & Co. in New England and New York area, has taken a position in the Jersey City, N. J., sales organization of Wilson & Bennett Mfg. Co., steel pails and drums. Mr. Barnes has done considerable sales, marketing and research work and has many years of experience in the industrial paint and chemical field.

Exterminators Meet Oct. 25

The fifth annual convention of the National Association of Exterminators and Fumigators is scheduled for the Hotel Peabody, Memphis, Tenn., October 25-27. Harry J. Hammond of 1016 No. Jackson Blvd., Milwaukee, is general chairman of the convention committee. Among the speakers will be Lee A. Strong, chief of the Bureau of Entomology, U. S. Dept. of Agriculture, and Dr. Thos. E. Snyder, senior entomologist of the bureau. Prof. J. J. Davis of Purdue University will be dean of the clinics. Other committee members for the convention include: *national committee*, Lawrence A. McKenna, William O. Buettner, Otto Orkin, Harold E. Jennings and Wilbur F. Smith; *Memphis committees*, chairman, Louis Kotler; secretary, B. J. Jenkins; treasurer, Joseph Hill; attendance and registration, Herman Carle, Joseph Mandelbaum and J. R. Franklin; entertainment, Arthur Murray; publicity, R. Cluck and Julian Haas; ladies', Mrs. Louis Kotler, and travel and transportation, Martin Meyer.

Who Buys Insecticides?

An editorial staff investigation in several markets among retail dealers to find out what kind of people buy and use your insecticides . . . rich people or poor, or both . . . and if possible what they buy it for . . . an article on this subject in an early issue of SOAP. Watch for it.

Maywood Join Union

G. W. Amerson, proprietor of Maywood Pest Exterminators, Maywood, Ill., advises that his concern has recently joined A. F. of L. Local Union No. 157 of Exterminators, Fumigators and Disinfectors, operating in the Chicago area. Maywood has also affiliated with the Chicago Federation of Labor and the Building Service Employees International Union.

Exterminators Change Name

A mail ballot of members of the National Association of Exterminators and Fumigators has just resulted in an overwhelming decision in favor of a proposal to change the name of the organization to the National Pest Control Association. The membership of the association cast 263 ballots in favor of the change in name out of a total of 301 voting. The change was originally scheduled to become effective during the month of August, but to avoid confusion in connection with arrangements for the annual convention of the group in Memphis, Tenn., October 25-27, it has been found advisable to continue the old name until the close of the convention. The main reason for the change was a desire to select a descriptive term for the industry that would more accurately describe its function in the present day and age.

Clark R. Bergseth Dies

Clark R. Bergseth of Termite Control Co., Tulsa, Okla., died on July 20th. Mr. Bergseth was a director of the National Association of Exterminators and Fumigators, his unexpired term having until 1939 to run. He is survived by his wife and daughter.

Detroit Janitor Firm Moves

National Janitor Supply Co., formerly located at 4101 Sixth St., Detroit, is now in new quarters at 524 State St.

National Can Elects

National Can Co., New York, subsidiary of McKeesport Tin Plate Corp., has announced the election of H. L. Buschman as vice-president in charge of the manufacturing division. A. G. Hopkins has been named vice-president in charge of the equipment division. Both men have been associated with National Can Co. over a long period of years.

Lehn & Fink Earnings

Lehn & Fink Products Corp., Bloomfield, N. J., reports net profit of $238,130 for the first six months of 1937, equal to 59c a share on 400,000 shares of common stock. This compares with $286,616, or 71c a share, in the corresponding period of 1936.

Shoe Cleaner Agency

Geo. J. Kelly, Inc., Lynn, Mass., manufacturer of shoe polish and shoe cleaner, has appointed Bennett & Snow, Inc., Boston, to handle its advertising.

Lowell Metal Changes Name

The name of Lowell Metal Products Co., Lowell, Mich., has just been changed to Universal Metal Products Co. The name "Universal" was adopted, as it is the brand name of the company's line of sprayers and dusters. There is no change in personnel. F. M. Newell, sales manager of the concern, advises that several new items will be added to the "Universal" line early next year. A new catalog is now in preparation and will be ready for mailing early in August.

Clarify Lowell Sprayer Name

Lowell Manufacturing Co., Chicago, has exclusive rights to the use of the name "Lowell" in connection with its sprayers and other products, according to a decision in the Michigan Circuit Court on June 30. A statement on the confusion in the use of the name and on the court decision was made recently by J. C. Armstrong, secretary of the Lowell Manufacturing Co. as follows:

"For several years certain confusion has arisen in the sprayer industry because of the use of the word 'Lowell' by two companies, both engaged in the manufacturing of sprayers. The Lowell Specialty Company of Lowell, Michigan, a Michigan corporation, which employs the trade name 'Lowell Manufacturing Company', have been in business for thirty-seven years. Their factory and factory office are located in Lowell, Michigan, and they have owned the trade mark 'Lowell,' which is registered in the United States Patent Office, for many years.

"Lowell Metal Products Company, which has its factory and office in the village of Saranac, Michigan, so used the word 'Lowell' that legal proceedings were instituted in the Circuit Court for the County of Kent, at Grand Rapids, Michigan, to prevent further confusion and to determine whether or not the Lowell Metal Products Company had the legal right to use the word 'Lowell' in connection with its sprayers. On June 30, 1937, the Honorable Leonard B. Verdier, Circuit Judge of the State of Michigan, decreed that the Lowell Metal Products Company must change its name to eliminate the word 'Lowell' and must refrain from using the word 'Lowell' in connection with its product.

"After September 1st, the defendant company must place on its products the legend, 'Factory, Saranac, Mich.' The defendant also is instructed to refrain from representing it as the successor to the plaintiff company or from making any other misrepresentations. The plaintiff has charged unfair practices.

"The Lowell Specialty Company now has full use of the word 'Lowell' on its sprayers and in the conduct of its business as 'Lowell Manufacturing Company'. This case is mindful of the old 'Elgin Watch' decision and will be met with the same confidence by the trade."

Mathieson Advances Mannheim

Robert M. Mannheim has just been named New England district manager for Mathieson Alkali Works,

Robert B. Mannheim

New York, with headquarters in the Hospital Trust Building, Providence, R. I. Mr. Mannheim has been a member of the Mathieson organization for the past six years and has covered the northern New Jersey territory until his recent appointment to the New England managership. James R. Harrington, who has been covering the New York metropolitan area for Mathieson, will take over Mr. Mannheim's old territory in northern New Jersey, while Donald G. Ross will replace Mr. Harrington in the New York area.

Lambert Earnings Gain

Lambert Co., St. Louis, reports net earnings of $652,061 for the first six months of 1937, equal to 87c a share on 746,371 common shares. This compares with earnings of $566,498, or 76c a share, in the corresponding period of 1936.

W. B. McCloud & Co. Move

W. B. McCloud & Co., Chicago exterminating concern, moved into larger and more convenient offices at 510 N. Dearborn street recently.

Wants Auto Polishes

A concern in Havre, France, is interested in establishing an agency connection for sale of automobile polishes of American manufacture. Interested firms may communicate by addressing the U. S. Bureau of Foreign and Domestic Commerce, Washington, D. C., mentioning inquiry No. 3626.

Stein-Brill Changes Name

Stein-Brill Corp., New York used machinery house, has just announced a change in name to the Brill Equipment Corp. There will be no change in management. An office and warehouse has just been opened in St. Louis in the Mart Building. The new branch will represent several nationally known machinery manufacturers in the St. Louis territory and will operate display rooms for their equipment.

Takes Over Birchard Office

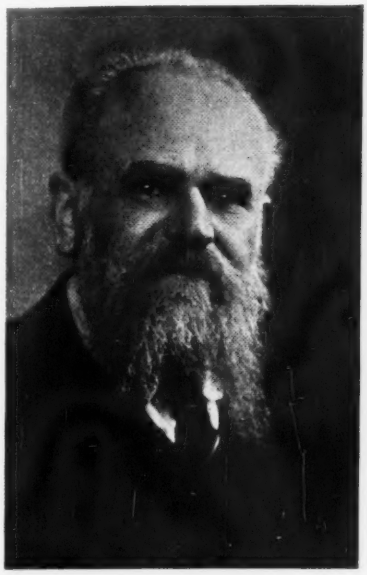
McLeod Exterminating Co., Buffalo, N. Y., recently took over the Rochester office of Birchard & Co.

Dreyer Advances Fred Beyer

Fred J. Beyer, who has been connected with P. R. Dreyer Inc., New York perfuming material house, for the past three years, has just been elected a vice-president of the company, the appointment having become effective July 16th. Mr. Beyer first became connected with the essential oil industry in 1916 when he joined Antoine Chiris Co. He acquired a financial interest in the firm of Fox & Clarke in 1923 and 1924, and since that time has done sales promotional work with various essential oil houses. Other officers of P. R. Dreyer Inc. are F. C. Theile, president, and P. Schaupp, treasurer.

Clement O. Kleber Dies

Dr. Clement O. Kleber, founder and owner of Clifton Chemical Laboratories, Clifton, N. J., died of a heart attack at his home in Clifton, N. J., July 14th, at the age of 74.



Dr. Kleber was born in Germany and was educated there, coming to United States in 1893. He entered the service of Fritzsche Bros. at their factory in Garfield, N. J., of which he was later to take charge. In 1900 Heyden Chemical Co., of which Dr. Kleber subsequently became treasurer, bought this plant from Fritzsche Bros. Later, in 1906, Dr. Kleber founded his own factory, Clifton Chemical Laboratories. For years, and up to the present day, his company has manufactured the basic materials for Fritzsche Bros. In recent years Dr. Kleber has gradually relinquished active management of his company to Dr. Arthur Nicolaus who has now assumed these duties in full.

Argentine Soap Industry Gains

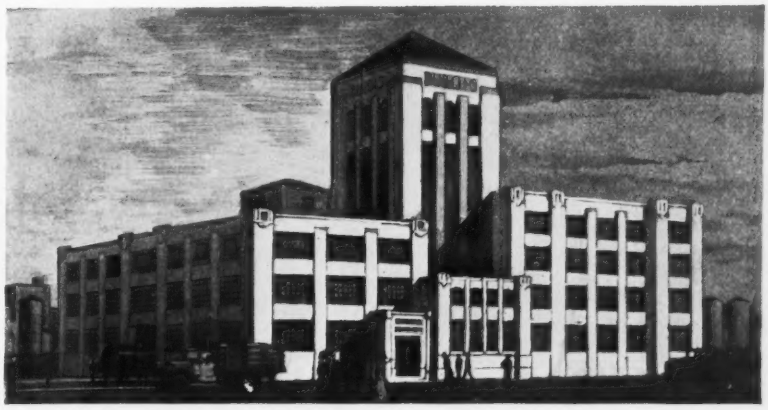
The Argentine soap-manufacturing industry is so well established that imports are negligible, and are confined to a few of the highest-priced foreign lines according to a recent analysis of this market by the U. S. Bureau of Foreign & Domestic Commerce. Most of the domestic soap has a tallow base. In fact, because of the by-products available from the local packing house industry, many domestic soaps contain no fillers such as soda ash or silicate. Those manufacturers employing sodium silicate now obtain most of their supplies from the local industry, which dissolves imported raw silicate in autoclaves to obtain the proper commercial density. In addition to a large number of important domestic manufacturers, several of the internationally-known soap manufacturers and meat packing firms also produce locally. It is estimated that toilet soaps account for only 5 to 8 per cent of total soap output, on the basis of volume. During the past year or so the industry has been faced with reductions in retail prices coupled with higher prices for raw materials, particularly tallow. The United States continues to be an important source of supply for such raw materials as rosin, alkalies and oils. In 1936 the Government promulgated regulations establishing limits for the fatty acid content of soap, and otherwise regulating standards for manufacture and sale.

Polak's Frutal Works, Inc., New York, perfuming materials, have just occupied new quarters in their own building at 36-14 35th St., Long Island City, N. Y.

Oil Prices Change Little

The oils and fats price index, as compiled by the U. S. Bureau of Raw Materials for American Vegetable Oils and Fats Industries, decreased from 119.5 in May to 118.0 in June. The index for June, 1936, was 97.5. The index numbers for various soap fats and oils for the months of June, 1937, May, 1937, and June, 1936, are as follows:

	June 1937	*May* 1937	*June* 1936
Grease	134.8	134.8	70.6
Coconut oil	71.6	82.2	49.5
Corn oil	136.7	141.2	128.9
Linseed oil	123.6	125.8	107.5
Olive oil	179.9	182.8	89.4
Olive oil foots	158.7	159.5	115.4
Palm oil	68.6	67.3	48.9
Palm kernel oil	64.0	65.5	54.6
Soybean oil	144.2	157.2	105.5
Whale oil	158.9	155.9	107.9
Stearin, oleo	85.6	86.2	65.9
Tallow	117.7	116.4	71.0
Cottonseed oil	150.6	154.3	140.1
Weighted average	118	119.5	97.5



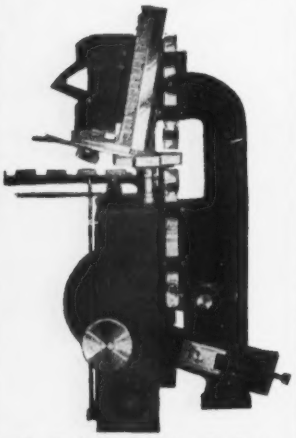
Architects view of the new plant being built in Cincinnati by the DuBois Soap Co.

Special Offerings of

New CRUTCHERS

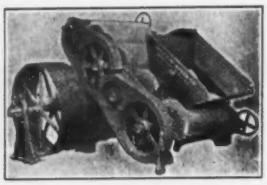
This Newman brand new, all steel, steam jacketed soap crutcher will crutch any kind of soap. We also build another crutcher especially adapted for laundry soap.

Automatic JONES PRESS



Small size fully automatic Jones toilet soap press. Capacity 150 to 200 small cakes per minute. A real buy at an attractively low price. Has been completely rebuilt in our shops.

H-A SOAP MILL



This 4-roll granite toilet soap mill is in A-1 shape. Latest and largest size rolls. Priced for quick sale.

New and Rebuilt SOAP MACHINERY *by* NEWMAN

We carry a complete line of equipment for the soap and sanitary products industry. All used equipment is rebuilt in our own shops and is guaranteed to be in first class condition. All new equipment that we manufacture such as crutchers, frames and cutting tables is of the finest material and workmanship. You can buy with confidence from Newman.

USED SPECIALS
For the Soap, Chemical, Cosmetic and Allied Trades

- H-A, 1500, 3000, 4000, 5000 lbs. capacity. Steam Jacketed Crutchers.
- Dopp Steam Jacketed Crutchers, 1000, 1200, 1500 lbs. and 800 gals. capacity.
- Ralston Automatic Soap Presses.
- Scouring Soap Presses.
- Empire State, Dopp & Crosby Foot Presses.
- 2, 3, 4, 5 and 6 roll Granite Toilet Soap Mills.
- H-A 4 and 5 roll Steel Mills.
- H-A Automatic and Hand-Power slabbers.
- Proctor & Schwartz Bar Soap Dryers.
- Blanchard No. 10-A and No. 14 Soap Powder Mills.
- J. H. Day Jaw Soap Crusher.
- H-A 6, 8 and 10 inch Single Screw Plodders.
- Allbright-Nell 10 inch Plodders.
- Filling and Weighing Machine for Flakes, Powders, etc.
- Steel Soap frames, all sizes.
- Steam Jacketed Soap Remelters.
- Automatic Soap Wrapping Machines.
- Glycerin Evaporators, Pumps.
- Sperry Cast Iron Square Filter Presses, 10, 12, 18, 24, 30 and 36 inch.
- Perrin 18 inch Filter Press with Jacketed Plates.
- Gedge-Gray Mixers, 25 to 6000 lbs. capacity, with and without Sifter Tops.
- Day Grinding and Sifting Machinery.
- Schultz-O'Neill Mills.
- Day Pony Mixers.
- Gardiner Sifter and Mixer.
- Proctor & Schwartz large roll Soap Chip Dryers complete.
- Doll Steam Jacketed Soap Crutchers, 1000, 1200 and 1350 lbs. capacity.
- Day Talcum Powder Mixers.
- All types and sizes—Tanks and Kettles.
- Ralston and H.A. Automatic Cutting Tables.
- Soap Dies for Foot and Automatic Presses.
- Broughton Soap Powder Mixers.
- Williams Crutcher and Pulverizer.
- National Filling and Weighing Machines.

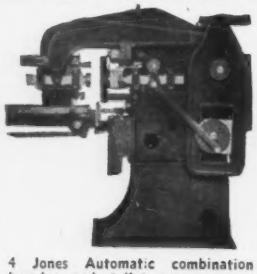
Send us a list of your surplus equipment—we buy separate units or complete plants.

Newman Tallow & Soap Machinery Co.

1051 W. 35th St., Chicago, Illinois

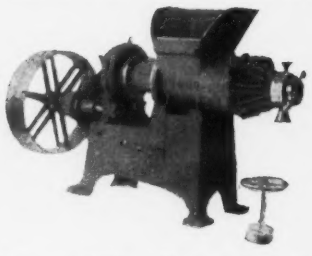
Our forty years soap experience can help solve your problems.

JONES AUTOMATIC



4 Jones Automatic combination laundry and toilet soap presses. All complete and in perfect condition.

SINGLE SCREW SOAP PLODDER



Single screw soap plodders with 6, 8, 10 or 12 inch screws. All completely rebuilt and unconditionally guaranteed.